

INTERNATIONAL SERIES

EDITED BY

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MILITARY LETTERS AND ESSAYS

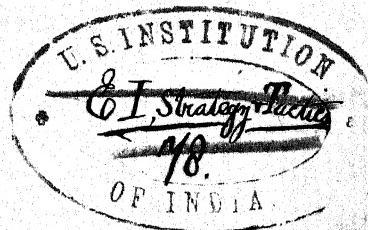
BY

CAPTAIN F. N. MAUDE, R.E.

AUTHOR OF

"Letters on Tactics and Organization," etc.

No. I.



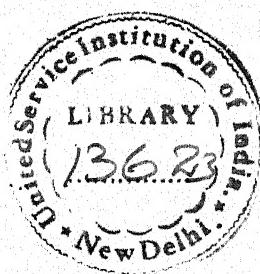
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PREFACE.

The following letters appeared (for the most part) originally in the columns of the *Civil and Military Gazette* of Lahore, and their purpose was to keep my brother officers in Bengal informed of the direction current military thought was taking in the principal armies of Europe, in all branches of the art of war, strategy, tactics, organization, and the training of troops for war. It has always been my conviction that the essential principles underlying the employment of troops in war never change; invention may modify for a time the balance between the three arms, and an exceptional weapon in the hands of one army only may temporarily bring about a startling change in the phenomena of the battle-field, as in 1866 and 1870, but once the equality of conditions is restored, matters revert to their former aspect with effective ranges and distances only increased.

Thus Leuthen, Rossbach and Austerlitz remain, and will remain for all time, types of consummate battle-leading, and a diagram of any one of these battles, with the scale omitted, will serve for any period since the fire-arm supplanted the bayonet as essentially the decision-compelling arm.

To bring this point out it was necessary to have frequent recourse to forgotten histories and biographies, and thus I account for the presence of the several reviews embodied in this collection.

Moreover, armament and skill on the part of the leaders being equal, victory, under all conditions of improvements conceivable in weapons, will ultimately remain with the best disciplined troops, and by "discipline" I understand that quality which is measured by the endurance of loss by troops under fire, having due regard, of course, to the circumstances of time, ground, and employment under which the losses were inflicted.

No training in which this ultimate end of "discipline" is lost sight of is worth the time wasted on it, and, reading between the lines, it will be very evident that I am far from considering that all the time spent in military training in England is employed to the best advantage. This accounts for the descriptions of field days, etc., which may appear to many to possess but ephemeral interest.

Finally, my chief object in republishing these papers has been to supply a want that from my own experience I know to exist; viz., some contemporary estimate made in peace-time of the spirit of different armies, the method of training in use in each, and the degree of efficiency they may be expected to develop on active service. Anyone who has attempted to unravel the causes which led to the defeat of the French in 1870, or the defeat of the Prussians in 1806, will, I think, readily admit of what great value half a dozen independent contemporary works, based on the above lines and written before the event, would have been to him.

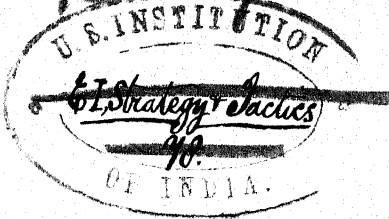
In conclusion, I should like to record my special sense of gratitude to Captain Arthur L. Wagner, of the United States Army, for his kindness in rescuing my manuscript from the series of misfortunes which have overtaken it since it left my hands for the mail steamer and which have entailed a long delay in publication.

F. N. MAUDE, *Captain,*
Late R. E.

Royal United Service Institution,
Whitehall, October 26, 1895.

CONTENTS.

	Page
I. Statistics of the Franco-German War.....	5
II. Smokeless Powder.....	13
III. Conditions of Modern Warfare.....	22
IV. Cost of Modern War.....	28
V. German Cavalry Maneuvers.....	35
VI. Independent Patrols.....	46
VII. A Modern Battle.....	52
VIII. A Study of a Modern Battle.....	60
IX. Attack or Defence.....	68
X. The Origin of Extended-Order Fighting.....	75
XI. The Legend of St. Privat.....	85
XII. Von Wedell's Cavalry Brigade at Mars-la-Tour..	101
XIII. Present Tactical Tendencies in the German Army.	124
XIV. The Physique of European Armies.....	131
XV. The Weapon or the Man.....	133
XVI. The Minor Tactical Day at Aldershot.....	140
XVII. The Volunteer Field Day at Aldershot.....	153
XVIII. Field Day at Aldershot.....	162
XIX. Notes on the French Maneuvers.....	169
XX. The German Army.....	178
XXI. Marching through Thuringia.....	230
XXII. The Panics at Gravelotte.....	239
XXIII. Von Moltke's Work	260
XXIV. The Spirit of the New German Infantry Regulations.....	270
XXV. Notes in Germany in 1889	291
XXVI. Blank <i>vs.</i> Ball Cartridge Tactics.....	296



THE STATISTICS OF THE FRANCO-GERMAN WAR.

Some months ago I called attention to the publications issuing from the German general staff, dealing with the question of the absolute numerical strength of the troops engaged on each side during the last Franco-German War. The last number completes the investigation up to the battle of Sedan, beyond which, in the absence of all reliable returns, and with reference to the well-known superiority of numbers on the French side, it is considered not worth while to proceed. The importance of these figures, for a due appreciation of several great questions as to organization and tactics, is so great that I propose to deal with them again at greater length than before; for I confess that before they came into my hands I had no adequate idea of the amount of evidence in favor of the favorite German idea of the superiority of the attack to the defence, or as to the full advantages of the German system of territorial localization. Taking the subject by and large, I had shared the opinion pretty generally held, that at the commencement of the war, with the sole exception of Vionville, the large numerical superiority at the command of the Prussians had been reason enough to account for their victories; and that therefore these victories proved nothing at all in favor of the German short-service army as opposed to the Imperial long-service one, or as to the individual superiority of a French soldier to a German one.

The former point is not considered in my authority, for the reason, I suppose, that the "general staff" thought that matter settled beyond dispute on the field of Jena, more than sixty years before; and those who are acquainted with the history of Prussian army reorganization in those days will understand why they should take this view, for it cannot too often be repeated nowadays that during the years of the Napoleonic regime in Prussia, every one of the questions with regard to organization, which still trouble us, were threshed

out with a thoroughness which leaves no room for doubt as to the wisdom of the steps then taken, but which, unfortunately for us, the peculiar conditions under which our army serves prevent us from accepting.

The study of this epoch is one not usually undertaken by Englishmen, and therefore a more recent and striking proof is required to show that our military system, though a necessity of our surroundings, is, nevertheless, but a compromise on which it does not do to rely too much, though I firmly believe that till existing conditions are modified, it is probably the best we can arrive at under the circumstances.

Putting Jena on one side, and till the issue of these statistics, I think it quite open to question whether anything really was proved against the principle of long-service armies. In 1866 a short-service peace-trained army defeated utterly and hopelessly a long-service war-experienced one; but the immense superiority of the tactical handling of the former, and the breech-loader, rendered all useful comparison of the two out of the question. But in 1870 the figures I am about to quote show that, even in spite of an inferior armament as regards the infantry, and a tactical handling but little superior, the long-service army, also war-seasoned, proved unable to hold its own against even an inferior weight of the enemy: and that, too, although the latter had almost always the supposed advantage of the ground, a defensive attitude, and field fortifications in their favor.

I will now come to the figures. The affair at Weiszenberg was altogether one-sided, for 48,000 rifles, 3,000 sabers, and 144 guns were brought up by the German staff to crush 4,650 French infantry with 650 cavalry and 3 batteries. Only half of the Germans were, however, engaged. The real reason why this steam hammer was employed to crack such a nut was that, the proper use of the cavalry division not having as yet been understood, the Germans were almost as badly informed of the whereabouts of their enemy as the latter were of theirs. It is not generally known that the formation of cavalry divisions was only decreed by the King on the 29th of July, and on the day of the battle, the 4th of August, the 4th Cavalry Division attached to this Army (the Third) was only just completed and moving up to the front—a mistake which,

however, will never be made by the Germans again. It was a consequence of this delay in forming the cavalry divisions that the battle of Woerth, which took place two days afterwards, was fought entirely against the wish of the army commander; nevertheless, the latter succeeded ultimately in bringing into action in round numbers 90,000 rifles, 7,750 sabers, and 342 guns, more than double the number that Mac-Mahon could possibly bring against them.

On the part of the French this was certainly the finest fight they made as regards the courage of the men and the regimental handling of the troops. Possibly in this instance they might have held their own against equal numerical odds, for their discipline and pluck went far to atone for their want of tactical instruction. The charge of Michel's brigade of cuirassiers, and Septeuil's lancers only failed to be well timed by a couple of minutes, and even in spite of this and the absence of ground scouts, which led to terrible confusion, fully obtained its primary object of gaining time, for, under cover of the confusion it produced, the French infantry, who were giving way, rallied again in a second position, and it took the Prussians three hours' hard fighting to turn them out of it.

These two actions were the only ones in which it was necessary for the Germans to put in the proportion of troops that is generally considered necessary in peace maneuvers to compensate for the disadvantage of having to attack a well-prepared and naturally strong position, as the following figures will show. At Spicher-en, fought the same day, 23,700 French rifles, backed by 90 guns and 260 sabers holding a position of unusual natural strength which had further been strengthened artificially, were turned out of it by only 26,000 German infantry with 78 guns and 840 cavalry, and these troops attacked under the most unfavorable conditions, being sent in in dribbles as they arrived on the field, with no unity of command, and on a front far in excess of what by all sound tactical rules they should have occupied. At Fredericksburg, in the American war, the Northerners, attacking under circumstances in every way more favorable, received from Lee the bloodiest repulse they ever experienced, and if in an ordinary war game a similar situation arose, I fancy any umpire would unhesi-

tatingly say that the attacking force deserved, and could expect, no better fate: and yet so different is the battle-field to the maneuver-ground that the Germans succeeded in winning.

The battle of Colombey—Nouilly or Borny—on the 14th August, gives a fair sample of what the Germans could do, both in attack and defence. Though only a portion of the French troops engaged had previously been under fire, they were all more or less affected by the course events had taken, and can hardly be considered as unshaken. The fight was brought on by the German outposts, who, seeing indications of a retreat in progress, attacked at once without waiting for orders, drove in the first line of the French position, and then held on to them against repeated and desperate counter-attacks on the part of the French. No sooner were the guns heard, than every body of German troops within call headed in for the fight, but the late hour at which it commenced, and the distance, prevented any considerable number from arriving before dark, and ultimately the decision was given by 30,500 rifles with 150 guns on the German side against 50,700 rifles and 206 guns on the French one, the latter actually bringing a five-fold superiority to bear on the point of attack, which was easily beaten back, notwithstanding the serious disadvantage the Germans labored under of having the blinding rays of the setting sun in their eyes, which hampered the practice of their artillery enormously. The French at the time, and possibly even now, claim to have won this action, but in presence of the fact that the Germans bivouacked on the ground they had taken from the French, and were only prevented from actually pursuing the latter by the fire of the forts of Metz, behind which the French withdrew, this claim can hardly be considered proved.

The next fight, that of Vionville—Mars-la-Tour (16th August, 1870)—was undoubtedly the most honorable to the Prussian arms. The course of this encounter is so well known that it would be superfluous to dwell on it further than to remind the reader that it began with a surprise—very indifferently executed, by the way—of the French cavalry camps by the 5th German Cavalry Division; and the sound of the premature firing alarmed the whole of the French Army lying almost close at hand, who instantly formed up

and fell with overwhelming numbers on the advance guard of the 5th Division, 3d Corps, just emerging from the defiles leading up from Gorze. Then began a typical encounter battle. Every man, horse, and gun within sound of the firing marching up to assist, all superior leading was soon at an end, and, tired and weary as they were with the long toil under the burning sun, the troops were sent straight into the fight, without any knowledge of the ground or the strength of the enemy opposed to them. The fighting began at 9 a. m., and up to 3 p. m. only 23,700 rifles, 8,100 sabers, and 126 guns had been brought up, against which the French engaged 59,100 rifles, 6,700 sabers, and 300 guns, including 24 mitrailleurs.

After 3:30 p. m., German reinforcements began to arrive more rapidly, till at the close of the day 47,100 infantry, 8,300 cavalry, and 222 guns on the German side were fighting against 83,600 rifles, 8,000 sabers, and 432 guns (including 18 mitrailleurs) on the other side.

To students of tactics, no battle in the whole war offers so many points of interest, for it is the only one in which all three arms bore their full share of fighting. It is not generally realized how well the French fought individually. They showed a steadiness under the most demoralizing circumstances that it would be utterly vain to hope for from their short-service soldiers of to-day, as, for instance, the way they rallied after being ridden over by Bredow's cavalry, and, facing about, received his second charge, and the extreme gallantry with which it is universally admitted they attempted again and again to attack in the face of the fire of the Prussian batteries. It was admitted by all that no troops could have done more, but the storm of shell that met them proved most conclusively the impossibility of attacking directly such lines of artillery with success, where the latter have a fair field of fire; and if that was the case in 1870, when common shell only had to be faced, what hope have infantry now, when ring shells and shrapnel have quintupled the power of the guns? It should be remembered also that the 3d Corps were Brandenburgers—i. e., true Prussians; and it is just a little bit doubtful whether the other corps consisted of quite the same stuff. The French claimed, and still claim,

to have won the victory in this day's fighting, but it is a pity for them that they did not substantiate their claim by a resolute attack next morning, for it was the very opportunity to have shown the value of the long-service war-seasoned army over the other system; and it is admitted now by German writers, notably by Prince Hohenlohe, that such a resumption of the offensive had a fair chance, and at any rate was the last one, of success, but Bazaine, the "*bon général ordinaire*," showed here the want of that iron resolution which makes the real leader, and preferred to fall back on to a defensive position, from which he hoped to show what the Chassepot could do under what the theorists of the practice-ground had proclaimed to be the most favorable conditions for it, forgetting, as they always do, in England no less than in France, the truth of Suvaroff's favorite saying: "It is not the gun, but the man who stands behind it, which signifies."

The position he took up is, by the general consent of all specialists in field fortification, allowed to have been absolutely ideal. On the left it rested on the forts of Plappeville and St. Quentin, which wing was further strengthened by a difficult ravine, which shattered the order of every Prussian attack directed against it; and its right was approached by open glacis-like slopes, not only favorable to the special power of the weapon, but ideally perfect for the counter-attack; and at intervals along its front lay hamlets of considerable extent, each of which had been converted into a small fortress. In this position, further strengthened by field entrenchments, he drew up his whole force of 100,000 infantry, 13,300 sabers, and 520 guns (including 66 mitrailleurs), and against this the Germans advanced with 166,400 rifles, 21,200 sabers, and 732 guns. By bad leading, Bazaine actually only brought 83,500 rifles, 550 sabers, and 398 guns (including 54 mitrailleurs) into action; but, in spite of the natural strength of the position above referred to, and for which any ordinary umpire would have required at least a two-fold superiority for the attack, 109,200 rifles, no sabers, and 620 guns proved sufficient to turn him out of it. There never was a battle in which a better opportunity was offered of turning the scale by a vigorous counter-stroke, initiated by a charge of cavalry masses; but the chance was lost, and with it went the last hope of the Army of the Rhine.

In the subsequent battles the superiority of the German morale was so marked that one is no longer surprised at anything; still the French individually fought with the courage of despair at Sedan, and the fact that they could and did bring their masses to bear by the radii against the circumference of the circle which the Germans had formed round them, hardly prepares one for the statement that the latter only found it necessary to bring 69,000 of their infantry, 800 of their cavalry, and 593 guns into action in order to defeat and take prisoners the 90,000 infantry and cavalry with 408 guns of the French. In the face of these figures, it seems impossible for the latter to maintain any longer the idea that it was only the numerical superiority of their opponents which crushed them, or for us to doubt the possibility of turning out good soldiers on the three-years-service system. The point I wish to make is this, that, except in time of permanent war, the long-service army inevitably eats out its own heart. The constant rehearsal of the same duties develops into mere routine, and neither men nor officers have any stimulus to exert themselves. Instruction in peace-time, to be of any use, must be constantly progressive as regards the men. The moment they think they have reached the end of their training, they begin to look on any repetition of it as needlessly harassing, and the officers soon take the same view, and cease to persist in the absolute precision of execution of all drill on which ultimately discipline depends. Besides, with service exceeding six or seven years, a very large proportion of the men have longer service than the subalterns and younger captains, on whom so much of the leading in modern fighting depends. Private Mulvaney, with his twelve years' color service, has his own opinion as to 2d Lieut. Smith's knowledge of warfare, and though as long as all goes well he will follow him with devotion for the honor of the old regiment, should things go badly, he may prefer to think for himself. The reserve man on rejoining has not the same self-sufficiency about him, he is a bit rusty, and all the more inclined to look up to his officers, for it is only a recurrence to an old habit. And this has always characterized the conduct of long-service troops when defeat has set in. The confidence between men and their immediate superiors once shaken, and the

whole structure of discipline has fallen to pieces like a pack of cards, especially after a comparatively long peace. Fortunately, our record of European war is so good that it is not easy to bring forward convincing proofs from our own history, but the retreat to Corunna, as described by Napier, gives one an idea of what we might expect, and it must be remembered that Moore himself was one of the best generals that we ever had, and that the creation of the infantry that afterwards became so celebrated was principally the work of his hands. It may be said that as yet we have not seen the Prussian short-service army in defeat on a grand scale, but we have, though it was a good many years ago; but I do not believe that national courage changes rapidly; the fighting instinct is almost the oldest we possess, and therefore probably the slowest to change; and it is only seventy-six years, about, since a short-service Prussian army showed what they could do, even under defeat. At Jena and Auerstadt the old long-service army, after a most desperate resistance, broke to pieces all of a sudden, and in forty-eight hours ceased to exist. Its place was taken by a short-service one, raised under every conceivable difficulty that the ingenuity of Napoleon could invent, but in the very first fight in which they again confronted the French at Grosz Gorchchen, where the bulk of their men had barely a couple of months' training, their enemies confessed that these were no longer the same sort of enemies they had had to deal with before, for, though again defeated, they never lost their order, and were ready to try conclusions again next day. In the next year's fighting (1814) they were beaten again and again, but still came up to time again, and at Ligny, the next year, after what, by the general consent of all who took part in it, was the bloodiest and most determined struggle of the whole Napoleonic era, they were in good order again within twelve hours, and fought as well as ever, shoulder to shoulder with us at Waterloo. The truth is, that whilst lacking many of the qualities of the professional soldier, short-service ones have a far greater personal incentive to fight, for war to them is a terrible reality, which strikes right at the heart of all their dearest interests: they are taken from their occupations and ties at home, and realize individually the magnitude of the stakes at issue. Every-

body, both English, Prussians, Austrians, and French, were struck with the determination the landwehr showed in 1866 and 1870, all the more so since even their own people had hardly expected it. But this personal interest is lacking to the purely professional soldier; between two such armies war is apt to degenerate into something approximating to the conventional duel, as opposed to the Californian one; in fact, it is not more than a century since it was considered the greatest feather in a general's cap to be able to boast of a successful, but bloodless, campaign. Ferdinand von Braunschweig, one of the most celebrated Prussian generals before Jena, would have been as shocked at the ideas his descendants hold about war as Gambetta's second was when Mark Twain proposed "axes" as the weapons for the celebrated duel, and would probably have replied to them in much the same words: "But, my dear sir, have you considered what the consequences of an encounter with such weapons might be?" Mark confessed he had not. "Bloodshed, sir, bloodshed," replied the second. "That's about the size of it," again returned Mark; "and if I might ask, what was your side proposing to shed?" I seldom listen to an umpire's critique in this country without thinking of the above, for undeniably we have still inherited a great many misconceptions as to the nature of war from the old days, and the extraordinary mania for believing in the virtues of the defensive and for the necessity of avoiding losses, forgetting that victory is the first object, and is cheaper at any cost than defeat, is distinctly traceable to the same old source. But this opens another and a very wide question.

SMOKELESS POWDER.

The discussion on the relative advantages and disadvantages of the new powders, with which the military papers of all countries have been filled during the past two years or so, reveal in a most striking manner the spirit in which fighting is viewed in the different armies concerned; this spirit being the outcome of the system of tactical training in fashion in each. Viewing the matter generally, it may be said that the tendency in England, France, and Austria has been to con-

sider the advantage derived from its introduction as principally on the side of the defensive, and to prophesy an alarming increase in the slaughter with which future battles will be accompanied. In Germany alone the contrary view has prevailed; there, with few exceptions, it has been pointed out that inasmuch as the absence of smoke facilitates the control of the fighting line, that side which goes into action intent on destroying its adversary, and not thinking how to avoid destruction, is more certain than ever to ultimately effect its object.

The truth is, the views put forward in the former countries rest on a fundamental misconception of the causes on which heavy losses depend; attributing them rather to the mechanical perfection of the weapon than to the obstinacy of the men who wield it; and again, by concentrating their attention on the one object of avoiding losses, they lose sight of the ultimate aim of all fighting—viz., the defeat of the enemy's army.

Actually a reference to military history will show that the losses inflicted in battle have only indirectly been affected by the nature of the arms in use, but have been simply conditioned by the relative fighting excellence of the two armies engaged. Where both have consisted of war-seasoned veterans trained to the highest pitch of tactical efficiency, losses of even 30 per cent have not been found sufficient to win a decisive victory, for the troops have fought till sheer physical exhaustion compelled them to stop killing one another, and neither side has retained energy enough to attempt a pursuit. Zorndorf is a case in point, and Waterloo would have been but for the arrival of the Prussians.

That the question of armament has nothing to do with the losses can be easily seen by noting how differently troops of the same nation have borne punishment under the same conditions of armament, but under different ones of training. The Civil War in America is in this respect most instructive, for here we have two opposing sides more similar in fighting characteristics and mutual obstinacy than can well occur where the contending armies belong to different nations. When these two forces first met at Bull's Run, they fought till both sides were tired of it, the victors being nearly as ex-

hausted as the vanquished, but this limit of exhaustion was reached when a comparatively small percentage had fallen on both sides. But when, in two years later, the same two armies met at Gettysburg, there ensued about the bloodiest battle for both sides that is known in modern history. The conditions of armament remained identical; the only thing that had changed in the interval was the "discipline," understanding the word in its widest sense, of the contending armies.

Or, to take two instances in more recent history, when the French and Germans met at Vionville in 1870, both being armies in a relatively high state of fighting efficiency, but neither being armed with weapons quite up to the latest standard, they fought till night put a stop to the slaughter, without decisive advantage on either side. But when, in the last Servian-Bulgarian campaign, two forces in a low state of tactical efficiency, but equally armed with better weapons than either French or Germans possessed, encountered each other in a fair stand-up fight, both sides were nearly equally exhausted by a perfectly trifling percentage of loss.

The fact is, every body of troops possesses a certain capacity for resisting loss, and this capacity varies with their discipline and the fighting talent of the race. Unequal armament affects the worse armed side prejudicially, but with equal armament troops will fight till their capacity for endurance is exceeded, and then they will stop, and nothing more is to be got out of them. The only way, therefore, in which troops can be trained to the highest skill in avoiding loss is by loosening all the bonds of discipline and allowing them to degenerate into a mere rabble. Two armies, both trained on the same system, might go on worrying each other almost indefinitely with the greatest possible economy of men on the battle-field, but also without any decisive result being obtained, and the results would be the same whatever the nature of the arms employed. To such troops the value of the smoke-screen is most obvious, for behind its veil thousands of unwounded stragglers could withdraw themselves temporarily, only to turn up safe and sound at the bivouac fires in the evening; but to soldiers filled with the determi-

nation to kill, and to keep on killing, the absence of the smoke-cloud can only be welcome. Their own movements are, no doubt, more visible to the enemy, but this is more than compensated for by the clearly defined target it gives them to aim at, at least within decisive fighting ranges, for the concealment the absence of smoke affords to the defender is, to my mind, in a great measure a delusion. It is true one no longer sees the little white puffs of smoke marking the line of defence to aim at, but instead the crest of the parapet is defined by the bright, scintillating flashes of the rifles, which, as far as my own observations go, are visible against all backgrounds and catch the eye more markedly even than the drifting clouds of smoke. With a breeze blowing obliquely towards one, the puff of smoke may not become visible for some yards after leaving the muzzle, and it is impossible to fix the exact spot from which the shot was fired; but the bright spark suddenly appearing, say under the branch of a small shrub, enables you to define exactly the point to be aimed at. And with artillery this is even more the case than with small-arm fire.

But, in the nature of things, this benefits the assailant more than the defender, for no one proposes or ever has proposed to launch infantry blindly to the attack of unshaken infantry, as a matter of principle. It may have to be done, and it may prove successful, but it is a terrible risk, not likely to be often run. But to troops once unsteadied by artillery fire the definition of the target is a matter of secondary importance, and indeed they are more likely to bag something firing into the smoke than attempting to pick off an individual.

The essential fact remains, and always will remain as long as battles are fought with projectile weapons of war, that ultimately the successful execution of an infantry attack depends on the accumulation by one side, within effective range of the enemy, of a sufficient number of rifles to establish a fire superiority over the opposing force. This superiority once obtained, the success of the assault follows as a matter of course, though not necessarily as the result of the first rush; for it is difficult, if not impossible, to decide when the sufficient degree of superiority has been attained. Consequently, the characteristic of all modern great infantry

fights has been long fluctuating fire lines, alternately advancing and retreating; victory eventually falling to the side which has the last intact reserve to throw into the combat.

This advantage will almost inevitably belong to the assailant. In the Franco-German war the German infantry armament was conspicuously inferior to that of their adversaries; the old needle-gun ranging barely 600 yards against the 2,000 and more of the Chassepot, which could also be fired half as fast again. Therefore, in all their battles, the German troops had to advance without firing, and hence without the supposed advantage of the smoke-screen, up to what is now well within the effective range of modern military rifles —i. e., between 500 and 600 yards; and, without a single exception, they succeeded in so doing, though not without suffering very heavy losses; still, one line having once got their footing, a second, a third, and even a fourth, could have reached the same limit, each with less loss, for the fire of those already in position would necessarily have interfered with the enemy's power of retaliation. Hence the ultimate power of establishing the requisite degree of superiority would depend entirely on the possibility of having a sufficient number of troops available at the right time and place. The power of thus assembling a superiority of force against the point of attack is one which in the nature of things belongs by right to the assailant, who can decide when and where to attack, whereas his opponent is compelled to make his line equally strong along his whole front. Of course a skillful use of ground, field fortifications, etc., may compel the assailant to attack where the defender chooses; but, broadly speaking, the former will always possess the advantage above pointed out—namely, that of knowing his own mind.

But it may be argued that however superior the Chassepot may have been relatively to the needle-gun, it is far behind the modern weapons in rapidity and accuracy, so that what was possible in 1870 will not be possible again. With all due deference to the numerous high authorities who hold this view, I believe their position to be untenable, and for the following reasons: In the early actions of the war it so happened that the Germans invariably managed to attack—

locally, at any rate—against a very large (in some cases an enormous) numerical superiority. At Woerth four and a half battalions attacked the center of the whole French army, and were ultimately beaten back, but managed to get well within the 600 yards limit. At Spicher-en the numerical disproportion for the first few hours was almost as great, and at Vionville every single advance was made against heavy odds (in the case of the 38th Brigade, northeast of Mars-la-Tour, the French being in a majority of at least four to one); yet in every instance the Germans managed to get within what is now very effective range.

The same line of argument applies also in a great degree to the artillery; for where the weapons are the same on both sides the power of accumulating a superiority of fire on any one point must always be on the side of the strategic assailant, relatively to whom the defender must generally be at a disadvantage. The only arm, therefore, which would appear to be unfavorably affected by the new order of things would be the cavalry, to whom the smoke-screen was undoubtedly a great advantage. But even here we may doubt whether in action the drawback will be felt as much as people imagine, for when the bullets are actually flying, the minds of all become so absorbed in the duty immediately before them that, even though the eye may see movements taking place in other parts of the field, the brain refuses to register them,—a close study of military history reveals scores of such instances which in peace-time would be incredible, and no doubt these will recur in the future. One thing, however, remains certain, that there is a limit to the endurance of human nerves, and that this limit will be reached the more rapidly the greater the killing power of the arms employed; and then, as Hoenig says in his "Cavalry Division on the Battle-field," "It will come to very much the same thing, whether the infantry carry pitchforks or magazine rifles."

As regards the question of sound, we have been led to suppose by the papers that the new powder gave very much less sound than the old, and that ultimately a noiseless powder altogether might be expected, and graphic pictures have been given us of silent death dropping from the clouds. This last prediction is a little premature; ultimately, when this

earth shall have cooled down to the point of solidification of the gases of which the atmosphere consists, and it pursues its course round the sun void of all atmosphere whatever, powders may, no doubt, explode without noise, for powders always do when exploded in *vacuo*; but then there will be no men to explode them, and war will perchance have come to an end. But pending that, it is the case that silent death may fall on troops from the clouds, because the range of small-arms is so increased that conditions may often occur when a volley, fired at 2,500 yards say, will be inaudible, and the noise of discharge has actually been changed by the adoption of a smaller bore for the rifle.

But sound has always been a very untrustworthy guide to go upon. The distances to which it will travel vary so much and so rapidly, and the principles which govern its transmission are so little understood, that no experienced officer would ever rely on it. Here is a case in point. At the battle of Spicheren, 6th August, 1870, a Prussian division (the XIIIth, we believe) was on the march, directed well clear of the point on which the fight took place. Suddenly heavy firing was heard on the left, and the line of march was at once changed, on the principle that, when in doubt, you cannot do better than march towards the sound of the guns. The new direction took the column through a large forest, and about 1 p. m., when they were half way through it, all sound of firing suddenly ceased. The general commanding concluded that it had only been an outpost skirmish, and as his men were much fatigued, he halted the column and ordered the men to cook their dinners. Simultaneously on the opposite side two French divisions, also hearing the firing, had got under arms and were in full march to the battle-field, when suddenly, and at about the same hour, the sound of the firing ceased and the French generals, having marched in a hurry and having left their camps standing, turned round and went home to dinner. Actually the firing had not ceased for one moment, but at the very time its sound ceased to travel it was being largely reinforced by fresh guns on both sides and continued to rage with undiminished vigor till the close of the day. Meanwhile on both sides the reinforcements were being anxiously looked for, and about 6 p. m. a Prussian gal-

loper found his men in the middle of the forest, just standing to their arms and beginning to move off, for just before his arrival, as suddenly as it had ceased, the sound of the firing had again become audible, and the general had already issued orders to continue the advance. As a consequence, the fresh troops arrived on the field just in time to take part in the final attack on Forbach and the heights to the northwest of it. The French were not so fortunate. They had hardly regained their camps, and the fires under the cooking-kettles had scarcely begun to burn, when, at the same hour as on the Prussian side, the sound of firing recommenced, and simultaneously aides-de-camp arrived, summoning the troops to the battle-field. The kettles were upset, the men stood to their arms, and marched off again, hungry and exhausted, over the same road they had followed in the morning, only reaching the vicinity of the battle-field in the small hours of the morning, and too late to be of any service there.

A similar instance occurred in the American war when, during McClellan's advance from the York River on Richmond, the whole of the Southern army under Longstreet and Jackson fell on the right wing of the Northerners and defeated it in full view of the remaining half, which looked on, unable to go to their comrades' assistance, owing to the impassability of the Chickahominy Creek and a muddy, swampy valley, about a mile wide, which lay between them. The curious part of the affair was that, though they saw every part and phase of the struggle, not a sound of it reached them, though the distance was little more than a couple of miles. The explanation in both cases is similar.

Professor Tyndall's experiments on fog signals off the Foreland and other parts of the coast showed that the chief essential for sound to travel is a uniform state of the atmosphere between the two communicating points. A continuous fog or a clear sky over a uniform surface of land or sea both favor the transmission of sound, but if the continuity of the medium is interrupted—either by the shadow of a cloud in the sky, which, by lowering the temperature underneath, diminishes the tension of the invisible aqueous vapor in the air, or, if across a dry stretch of country, a marsh, stream, or forest causes the air over it to take up more moisture than it nor-

mally holds on either side of it—an absolute wall against which the sound rebounds is formed between the two stations. Now in both the above instances these conditions were present at Spicheren. The sky in the early morning was reasonably clear and the tension in the mist of the valley uniformly continuous, but as the heat of the day increased the vapor rolled up into clouds, and the presence of the forest caused a difference of tension to exist, and through this the sound could not penetrate. As the sun lost its power, and the air again became uniform in composition throughout, the sound was again able to penetrate freely. In the same way, at Gaines' Mill, the name of the American action quoted above, the interposition of the marshy river again caused an inequality in the atmosphere, with a similar result. So it will be seen that sound is not a very certain indication on which to base one's conduct, and the general who relies on it to guide him through the difficulties of a modern campaign would be relying on a very rotten reed.

But if, then, it follows that smokeless powder will have no material effect on the losses in actual battle, and that therefore no special change is called for in our formations, there can be no doubt that the preliminary operations before the period of decision arrives will be much more difficult than formerly—as much on account of the absence of smoke as because of the increased range of the weapon and its greater accuracy in the hands of cool, unshaken men. The only plan hitherto proposed which seems to me to meet the requirements is that of Col. von der Goltz—viz., the formation of independent patrols, as described in another article and to which the reader is referred.

Perhaps, in our own case, the re-creation of the light companies might meet the difficulty best, for our companies are almost too small for further depletion; but in any case it seems to me that, if we are to retain our position as an army ready to go anywhere and do anything, we shall again have to go back to specially selected and trained light troops, taught to skirmish like red Indians, and to infantry of the line, taught also to fight in individual order as far as their qualifications will permit, but whose chief strength should lie in their absolute discipline when moving under conditions in

which they are exposed to losses, but not able to return the fire, as in the following lines of an attack.

THE CONDITIONS OF MODERN WARFARE.

In a former letter I endeavored to show how recent changes in armament had rather favored the prospects of the cavalry being again employed in masses, than the reverse. This week I hope to set artillery officers thinking as to whether there may not also be for them a period of greater tactical importance approaching. I assume in all cases, in speaking of the "battle"—i. e., of the decisive encounters of a great war—that the condition of the ground on which it will be fought out will be favorable for maneuvers. This must necessarily be the case where two large armies, equally confident in their fighting power, are opposed to each other; for both will naturally try to obtain the conditions best suited to give full play to their maneuvering capabilities, and also because the large number of roads necessary for the movements of the monster armies of the day will, as a rule, only be found in comparatively easy country, clear of natural obstacles and cover. As pointed out in another letter, every battle must necessarily commence with a great artillery duel, and the issue of this duel determines for the rest of the first act of the drama which side is to be considered as the attacker and which as the defender. It is unnecessary to go into the details of such an encounter; they belong purely to the artillery; and, thanks to the efforts of our Inspector General of Artillery in India, our gunners have now as reasonable a chance of learning this part of their duties in the annual practice camps as those of any other army. It is the handling of artillery relatively to the other arms that it is particularly desired to bring out. The first great point to be decided is whether modern artillery, with guns of approximately the same power as our new 12-pounder, can be relied on to protect their own front. Colonel Brackenbury, in his pamphlet on the use and abuse of field artillery, reviewed in these columns a few weeks ago, thinks it can; and as regards an attack by infantry, he is certainly right; but as against the charges of cavalry divisions, his conclusion is open to ques-

tion. The Austrian artillery in 1866 were undeniably brave and determined soldiers. It was the one arm which in that disastrous campaign upheld the honor of its country; yet Bredow's regiment of four squadrons rode into and captured 18 of their guns with a loss of only 13 horses, notwithstanding the facts that the gunners had 1,500 yards clear range in front of them, and the cavalry horses were in campaigning condition (action of Tobitschau). Similarly, at Vionville his brigade had to face the fire of 36 French guns at least, over 1,800 yards of open, yet they practically lost nothing from their fire. Indeed, an officer who rode in the charge assured me that in his front only one gun was fired twice, and that the French officer in command of the battery told him afterwards, in the hospital at Metz, that their approach had been so rapid that they simply could not lower the elevation fast enough to follow them. In the meanwhile, no doubt, the power of the guns has increased enormously, but there is room for considerable improvement before the stopping limit is reached. The cavalry, too, have also made progress in the speed and distance they can gallop and in the ease with which they maneuver; and charges such as those delivered at the cavalry maneuvers in Alsace in 1886, where two whole divisions, say 6,000 sabers, were hurled at full gallop against an artillery line of nearly 100 guns, will have quite a different effect on the nerves of the gunners than the smaller ones had. An officer of the British artillery who was present on one of these occasions confessed that the effect was simply overpowering, and that the gunners actually had barely time to fire more than five rounds or so. My conclusion is that, at any rate during the earlier battles of the war,—until, in fact, one cavalry has established such a marked superiority over the other that the latter will not dare to make the attempt in the face of its watchful enemy,—an artillery line cannot be held as capable of protecting its own front on the field of battle against cavalry; and if any artillery officers disagree with this conclusion, I would ask them to go down to Muridki, if the camp is not over before this letter reaches you, and ask General Luck to show them what a charge of two cavalry divisions means, even over an apparently open plain.

If the conclusion is granted, then it follows that both

sides will be compelled to form their great lines of guns under cover of strong infantry advanced guards, and these guards, in order to assist in the work of their artillery, will endeavor to advance near enough to be able to overwhelm the enemy's gunners with their long-range fire. But a limit will be placed on this advance by their own near approach to each other; for if they cannot succeed in getting near enough to the enemy's guns, the next best thing they can do will be to prevent the enemy getting near enough to their own guns, which it is their special object to protect. The consequence will therefore in all probability be a stubborn fire fight between the two infantries, and the next question is, How are the supports of these two lines to be placed? Let us assume the two artilleries distant 2,000 yards from each other, and the two infantry guards 800 yards apart,—then each guard will be 600 yards in advance of its own guns. Now it is evident that under normal conditions no supports can be placed in front of the guns where they would be exposed to all the overs meant for the front line, the shells short of the guns, and the premature bursts of their own shells. Equally evident is it that it is not reasonably possible to place them closer in rear of the guns without exposing them to tremendous loss, for the ground in rear of the artillery will be torn up by shell splinters and shrapnel bullets for a good 1,000 yards to the rear. The consequence is that at this stage of the proceedings the two infantries engaged will be only 800 yards apart, and neither will have any support at hand within less than 1,600 yards. This does not very much signify to the side which means to attack, and at this period, the result of the artillery duel being still undecided, neither can yet be considered as having renounced the offensive definitely. But the time must come when one or the other is distinctly getting the upper hand, and the unsuccessful side must make up its mind what to do. It seems impossible to expect that any leader would deliberately elect to expose his artillery to piecemeal annihilation. Rather it is likely that he will withdraw his guns while there is yet a chance of getting them off in sufficiently good condition to render it possible to employ them in a new direction at a later stage of the battle. Then comes the problem, How is the gap

they leave to be filled? This is a point our text-books and easy guides to promotion do not tackle; indeed, I have never met a professor or instructor in the British service who had ever contemplated it. Yet to my mind it is the crux of the whole matter, and is so difficult of solution that alone it suffices to establish the superiority of the attack over the defence.

Try and picture the scene for a moment. It is a matter of common knowledge that nothing works so detrimentally on the morale of infantry as the withdrawal of the guns, but just as this withdrawal commences, the order comes to the latter to advance. The enemy's artillery has seen the preparations for retreat, and now intensifies its fire to the utmost, at the same time giving the elevating screws a turn to increase the range a little, and the whole ground for 1,000 yards in rear of the target is torn up into dust by the splinters of shrapnel and shell, and through this dust and confusion come galloping some hundred teams of almost unmanageable horses. Imagine the position of an officer in command of one of the supporting battalions, who has been brought up all his life to believe that only in extended order is salvation. His common sense would tell him that in this case it would mean rout entire and decisive; but it is hard to break with the fixed conviction of a lifetime at such a moment, and more especially to one who for perhaps some thirty years has been deliberately taught to shirk responsibility. But let us suppose his common sense to triumph, and that the battalion or battalions reach the crest of the ridge and see the enemy before them. What reasonable chance exists of covering the remaining six hundred yards of open which still separate them from the advance guard in full view and fire of the victorious artillery? Prince Hohenlohe's notes on the French advances at Gravelotte and the fire of the Guard artillery at Sedan will supply the answer.

This, of course, is the moment to be seized by the cavalry, as is pointed out in another letter, and therefore need not be gone into again here. I will, however, assume that the opportunity is allowed to slip, and that the defenders' infantry, thanks to steadiness and discipline, succeed in reaching the line held by their advance guard, and establishing them-

selves in it. And further, that they succeed in beating off the attempts of the assailants to advance further. The fight, as has so often happened, comes to a deadlock, both infantries still strong enough to defend the ground they stand on, but neither possessing "go" enough to advance. The only possibility now of carrying through the action lies in the advance of the artillery to decisive range—utterly regardless of loss. With each minute the infantry fight continues, the accuracy of fire falls off, and probably not one man on either side remains cool enough to hit a single gunner at 600 yards. In a recent letter on Colonel Brackenbury's paper on Field Artillery, I quoted the results of the French experiments at Bourges, which showed that on the peace practice-ground the four batteries of a French division could at 1,200 yards develop a fire effect equal to that of the whole infantry of the division when drawn up in normal attack formation; and further, that, from the Okehampton experiments, the power of artillery increased enormously as the range decreased; hence, since the accuracy of artillery fire does not fall off under fire to anything like the extent that the accuracy of infantry fire does, it is reasonable to assume that an advance of the guns of the attacking division abreast of the infantry, or a little in advance of it, would have an absolutely overwhelming effect. If even in 1870, with guns of barely a fifth of the power of those of to-day, such an advance was in all cases except one (at the farm of St. Hubert, Gravelotte) practically decisive, to-day there ought to be no doubt about it at all. Obviously such an advance is only possible at this period for the side which gained the upper hand in the preliminary duel, and it is only after some such attempt has been made and failed that the defenders' guns can come on the scene at all, but then an opportunity will be offered them, which, if taken, ought to decide the action at once. But to seize either this or the former one, it is essential that the artillery should be able to maneuver well and rapidly; and it therefore seems likely that in the future higher demands than ever will be made on the skill and pluck of the drivers. In spite, therefore, of Prince Hohenlohe's statement, that in practice he had never seen any formations used but columns of subdivisions and line, and that for all practical purposes

all the remaining formations in the drill-book might be cut out, it appears to me that, though no doubt this was the case in the war to which he refers, it is assuming a great deal too much to take it as proved that maneuvering will no longer be required in the next. On the contrary, if we are to be prepared for events, it would seem necessary to practice the handling of these large masses of guns in peace; very much on the same lines as those now followed by the cavalry divisions, the point in both being so far the same that in each case the object is to transfer a large body of mounted men from a distant point and form them in a line facing the enemy in the least possible time. In one respect here the Germans are decidedly ahead of us. With them the field artillery are particularly trained to cover long distances at the gallop, and also do a certain amount of maneuvering at that pace. Of course we can gallop too on occasion, but one would like to see it a little more practiced in peace.

To my mind, the more one thinks over it, the more one becomes convinced that the form of the battle is tending back every day towards that of the Napoleonic era. For a time improvements alternately in the artillery and infantry armament gave to one side or the other a preponderance of strength, and this preponderating power gave its stamp to the battle. But the relative powers of the two arms are now again very much what they were at the commencement of the century, only each arm has about tenfold the striking distance it formerly possessed. The shape of the battle will, therefore, be much what it was before, only with the distance multiplied approximately by ten. Whether any modern battle will ever be fought out with the bloody determination of say Wagram or Friedland, it is impossible to say, only with short-service armies it is at least improbable; but it is because of these changes in the condition of service that I am inclined to believe that the strain of the fighting will again tend to settle on the shoulders of the artillery; and further, that if the latter are trained sufficiently highly to answer all demands on their mobility and maneuvering skill, it will be practically impossible for their side to be defeated. Always provided, of course, we can find a general who will know how to employ them.

THE COST OF MODERN WAR.

It has become one of the commonplaces of contemporary journalism to refer to the frightful sacrifices of human life that modern war entails, and to ask what rulers would dare to incur the moral responsibility which such slaughter entails. If facts and statistics bore them out, there would be nothing to quarrel with in those phrases, for undoubtedly it would be a great thing to bring public opinion into harmony with the opinions of the experts who virtually decide on questions of peace or war; but since the facts actually point the other way, it is a very bad thing indeed that the public should be misled into believing the responsibility which rests on the rulers is so great that they would hesitate for a moment to embark on a war in which their calculations show victory to be almost certainly on their side. For the cost of war to the victors is by no means so great as the public believes, and it may well happen that the rulers of other countries, perfectly well informed on this point and confident in the fighting value of their armies, may consider the game well worth the candle, and thereby seriously derange the calculations of those whose opinions have been formed on those supplied them by the daily journalist.

It would be a good thing if every candidate for a seat in Parliament were compelled to undergo a qualifying examination in the principles of war as an instrument of polities, and a most searching one in the statistics of recent campaigns. I fancy the study this would involve would disagreeably astonish those who believe that any considerations of humanity would deter a resolute governor or group of governors from engaging in military operations in cases where, seen from their own point of view, victory might appear sufficiently certain.

Perhaps the following figures taken from Dr. Engel's statistical work on the campaign of 1870-71 may induce some of my readers to consider the matter. It is generally believed that this campaign was one of the bloodiest on record, but actually the figures worked out by this writer, and which may be considered as nearly accurate as it is possible for figures dealing with such questions to be, proved that exactly the opposite was the case. Out of close on one million

combatants that Germany poured into France during the seven months the war lasted, scarcely 40,000 lost their lives in battle or died of their wounds or of disease—i. e., barely 4 per cent of the total number; and of these one-quarter succumbed to sickness, leaving as the net loss in killed due to the enemy's fire, in round numbers, 30,000 only. Of the 10,000 who died of disease, about 6,000, according to the tables of the life assurance offices, were bound to die anyhow, so that the net loss due to the campaign amounts to only 3.4 per cent. Compare this with the losses of human life that any board of railway or canal directors is prepared to risk with a light heart in an undertaking promising 5 per cent return on the capital entrusted to their charge, and the deduction is obvious, that the statesmen who have the lives and happiness, to say nothing of the financial welfare, of the nation they rule to look after, are a good deal more justified in incurring the risk which the care and attention they have devoted to their powers of offence has reduced to a minimum. The statistics of human life lost in commercial undertakings are not as carefully kept as is desirable, but it is pretty certain that the percentage of deaths on the Hurnai line, for example, pretty largely exceeded that quoted above, and equally so that of the Suez and Panama canals; the Severn tunnel, and half a hundred other undertakings whose names will readily occur to any engineer of experience, were also not completed, if completed at all, without a far greater proportionate sacrifice of life than it cost Germany to subdue France. And in comparison with the return in both moral and material welfare that this campaign brought to the former, what has any commercial undertaking to show? It is quite impossible to state in figures what the value of the new sense of power is to the Germans as a race; but no nation in Europe, even including England, can show anything like the material development that has taken place along the banks of the Rhine, principally since the fear of French invasion was definitely removed, and that, too, in spite of the losses which, bimetallicists maintain, the introduction of the gold coinage inflicted on the nation, losses which in their opinion far exceeded in amount the indemnity levied upon France, which in itself barely paid the expenses

of the war. Now in this particular case there was no immediate prospect of great benefit to trade, there were no colonies worth speaking of to acquire, nor was Germany in a position to secure the naval supremacy necessary to command trade over her enemy. How different would it be in a war between France and England! and it is scarcely reasonable to suppose that this obvious lesson of the war has been lost on our neighbors across the Channel. Would it not be as well if this view of the case were brought prominently before those commercial members of the House who oppose every proposed addition to our armaments? They at least, as directors of paying concerns, ought to know that they themselves would not hesitate to recommend a proportional risk of life to their shareholders for a corresponding profit. Why, therefore, should the directors of a state, who only do for their country on a large scale what they are paid to do for their shareholders, hesitate to incur an equal risk?

But the special military interest of these statistics lies more in the tables of the wounded. Most of us can probably face the prospect of sudden death in the performance of duty—that is the special prerogative of our calling, as Schiller in the “Reiterlied” sings—

“Wer den Todt ins Angesicht schauen kann—
Der Soldat allein ist der freie Mann.”

“He who can look death in the face—
The soldier alone is a free man.”

But the prospect of mutilation and agonizing wounds is by no means so pleasant, and it is interesting to see what our chances of escape actually are against the breech-loader. Possibly, too, the figures may give us some foundation to go on in reasoning out our tactical formations.

The total number of men wounded were, in the Infantry, 103,569 (including 4,365 officers); in the Cavalry, 3,546 (including 262 officers); in the Artillery, 5,869 (including 421 officers); and in the Engineers, 402 (including 41 officers); or a grand total of 113,386 of all arms and ranks. Hence, out of every 1,000 infantrymen wounded, 42.1 per mille were

officers and 957.9 men; of every 1,000 cavalry wounded, 73.9 per mille were officers and the rest men; and similarly for the other two arms 71.7 and 102 per mille were officers respectively. This rather upsets one's preconceived opinions, for I confess I was quite unprepared to find that even in a campaign in which the engineers' services were so little required comparatively, the sapper's chances of being hit were $2\frac{1}{2}$ times as great as that of his comrade in the line; and that a cavalry officer's chance, also in a campaign in which they met with no real opposition, was worth so much less purchase than an infantryman's. The same fact is even more astonishing in the case of artillery, for there seems no particular reason why the artillery officer should be in nearly double the danger of the infantry officer, who is compelled to expose himself for the sake of example to his men much more frequently than the gunner officer, who walks about his battery apparently in no more special danger than the men who serve the guns.

Another curious fact is also brought out in a battle, showing the severity of the wounds—viz., that it is again the engineers and cavalry who share the distinction of getting the severest wounds, for 22.4 per mille of the former died of their wounds within 24 hours, and 13.3 per mille of the cavalry, against only 8.5 per mille of the artillery and infantry officers; and as regards men, 182.2 per mille of the cavalry, 146.9 of the infantry, and only 105 of the artillery; the figures for the engineers being a fraction less than for the infantry.

This result is even more astounding than the former, for one would naturally have expected the artillery to have suffered more from shell wounds generally, far the most dreadful to look at, than the other arms; and similarly, where the greater proportion of both cavalries only used blunt swords in steel scabbards, and where about a fifth of both were further protected by cuirasses, the natural expectation would have been to find a considerable percentage of insignificant bruises and few dangerous wounds. These figures, of course, only show the proportions in the troops who actually came under fire. Taking them over the whole army, they come out very differently, for cavalry and pioneers were far less frequently engaged than the other two arms.

It is interesting also to note the comparative degree of danger to which the different ranks are exposed. Out of every 1,000 of each rank, 25.64 generals were killed, 96.29 staff officers, 78.9 captains, 80.5 lieutenants, and 3 surgeons; and of the men in the ranks only 31.17—figures which show pretty conclusively that the officers did their duty, and that the position of general staff officer under breech-loading fire was not altogether a sinecure. Comparing the probabilities of being wounded, the staff still head the list with 182.2 per mille, the lieutenants coming next with 176, the captains with 151, the generals with 87, and the doctors last with only 22 per mille. This last figure, and the corresponding one above, ought, by the way, to cause the militant officer of the medical staff to draw in his horns a bit.

Unfortunately, Dr. Engel only gives the number of fatal cases of sickness, not the number treated in hospital, so it is difficult to compare the relative losses that we suffer in an Indian campaign with those which were occasioned by the conditions of a European campaign. Dysentery, diarrhea, and small-pox claimed most of the victims, and principally in the army of investment round Metz, who certainly were compelled to live under exceptionally unhygienic conditions. But comparing the actual losses suffered by the officers with those which would have occurred under normal conditions in peace-time, according to the tables of the life assurance societies, it appears that a campaign in France, in spite of its drawbacks of bivouacs in cold and wet, was distinctly more favorable to longevity than their usual manner of life in peace. But against this must be set the fact that the officers as a body were picked lives, and the insurance tables only deal with average lives. At any rate, it is enough to raise envious feelings in the minds of those who are serving their country in Ind, to find that even in peace-time they are incurring about three times the risk that the Prussians ran in wartime from natural causes. Even the rank and file, who lost twice as many as the officers in proportion, were more favorably circumstanced than we are under ordinary conditions. But it is a strong point in favor of those who believe with Darwin that the existence of an aristocracy justifies the theory of the survival of the fittest, to find that the officers,

the pick of the aristocracy of Germany, were only half as liable to disease as the men, who themselves are not the scum of the nation, but to a considerable extent selected lives, and no one who knows the German army would attempt to maintain that this immunity was due to the officers having taken advantage of their position to secure more favorable surroundings, for the German officer considers it as much a matter of honor to share the hardships of the men as we ourselves do. Of course the senior officers are able to take more care of themselves than the junior regimental officers, and with disciplined troops this is as it should be; but the figures show pretty clearly how much less elastic the older constitutions are than the young ones, for the death-rate in the ranks of the generals was 20.5 per mille as against 8.17 and 7.24 in those of the lieutenants and captains respectively, whilst for the men it was only 13.8, or a fraction over the British peace-time average, including India and the Colonies.

The reason for the sentimental outcry about the slaughter in this war is, of course, to be found in the fact that even 3 per cent on a million makes a pretty large figure, and the ordinary human mind has a tendency to consider human suffering as cumulative, and not individual. But this is the one mistake the soldier should guard against making, for it leads to an altogether false appreciation of the facts. Unless the will is steeled to resist it, the sight of a great number of maimed and mutilated fellow-creatures will create an impression altogether overpowering. But, in reality, it is the individual suffering only which counts. The sufferings of a man shattered beyond recognition almost by an explosion of gunpowder—probably the most intense form of anguish known—are not in the least alleviated to the man himself by the knowledge that he is the only sufferer. Indeed, the tendency of the human mind is directly the other way, and it is a satisfaction even to a man with a toothache to find a fellow-sufferer. On the other hand, it must, of course, be admitted that where a large number of wounded are gathered together, their individual comforts are liable to be curtailed; but then, where suffering is really great, it is astonishing how little the sufferer cares about these comforts. Probably this letter will seem most cold-blooded and inhuman to civilians, but it

is written primarily for soldiers, and to soldiers it is, above all things, necessary that no conceivable amount of human suffering—which, by the way, they may themselves be sharing next moment—should be able to shake their resolution. There is a saying in vogue in the German cavalry which might also be extended to every other arm—viz., “Care for your horses (resp. men) in the stable like a miser cares for his gold, risk them in battle like a gambler,” and, it might be added, be absolutely regardless for the lives of your enemy.

The truth is, that it is this invincible hardness of character, far more than ingeniousness of brain, which really makes the great commander. The mere intellectual effort of forming a military plan to turn an enemy's flank or pierce his center is so slight that the commonest schoolboy's brain would suffice for it. The reason why such plans as Napoleon carried out against his enemies are not more frequently met with in military history is because the majority of men cannot face the awful responsibility for human lives which such plans entail. This is no new doctrine; in fact, it is identical with the advice Krishna gave to Arjuna in the *Mahabharata*, which goes to prove how very similar human nature was in those days to what it is now; and to all those who may be called on to assume the responsibility of leading men against the enemy, I cannot do better than recommend the passage, which they will find in Edwin Arnold's translation of the *Bhagaved Gita*—a book which contains far more valuable maxims for the officer than all the text-books of tactics put together.

Tactically, the lessons to be deduced from these figures are equally important. It is shown now beyond possibility of question that the actual danger of material loss, even in face of such a far superior weapon as that with which the French were armed, is far less than what it was with the old muzzle-loader—a result the exact opposite of what was prophesied by the gun-maker; and hence it seems a fair deduction to make that in the next war, with equal arms on each side, the losses will be still less. For, owing to the increased range at which these new arms are effective, there will be more time for the nervous to get frightened, and a corresponding increase in opportunity for those whose hearts are not in it, to escape from the danger; in other words, the

amount of skulkers will be greater—a probability for which the Germans, at least, seem prepared, at any rate to a far greater extent than any other power. If, for example, for one man hit formerly five were frightened, next time the proportions will be as one to ten; and since frightened troops are the special prey of the cavalry, the opportunities for its employment will be doubly great. But if we wish to avoid this danger, the path seems perfectly clear before us. We must base our formations more on those which render the preservation of order easier, than on those which tend to reduce losses. It is better to lose a dozen men out of fifty and keep the remainder in hand, than to save, say six, and have the whole of the rest beyond control; and the most feasible means of attaining this object will be found either in Major Young's silver medal scheme, or in that of the "Mid-summer-Night's Dream," which was recently reviewed in your columns. The principle of both is the same, and either would serve the required purpose.

GERMAN CAVALRY MANEUVERS.

I have just ridden in from the cavalry drill-ground, where the general officer commanding the 11th Corps has been inspecting the two regiments of the Hessian Dragoon Guards quartered here, and sit down at once to record my impressions whilst they are still fresh and vivid before me. I went down to the ground this morning almost prepared to scoff, but I have returned decidedly inclined to pray, figuratively speaking. It is intensely difficult for any Englishman, proud of his race and the magnificent material for cavalry soldiers it produces, to divest his mind of the patriotic bias and to view things as they really are, after his ideas of military smartness and etiquette have been upset by seeing the individually dirty and badly turned-out types of the German soldier about the street. It is impossible to avoid drawing unfavorable conclusions between the half-grown country bumpkins in uniform one sees on sentry-go here, with the smart, well-set-up hussar or lancer one is accustomed to see swaggering down the Mall, say at Meerut or Lucknow; and

in each case the bias leads one unconsciously to contrast the extreme types of either, instead of taking a fair average of both.

As I rode down towards the artillery range on which the inspection was held, I reviewed in my mind all that I had previously written on the subject, and almost convinced myself that I had really formerly sinned in the anti-patriotic line, and that these troops could not be so good as they had appeared to me to be at a distance. But almost the first appearance of the regiment on parade brought me to my senses. I rode along the line two or three times to be quite certain that I was not mistaken, and I saw that every horse was drawn up dead square to the alignment, and every stirrup practically touching—i. e., the two fundamental principles of accurate maneuvering strictly fulfilled. Presently the general arrived and rode down the line, and then the march-past began—in column of divisions at a walk. About this there was nothing particular to notice, except that the horses, though in singularly plump condition for Germany, looked terribly overweighted, and that the position of their heads was uniformly good. On the other hand, their saddlery and bridles left a great deal to be desired, though the men's uniforms were sufficiently well kept. There was no trot-past, and immediately after the walk-past the regiment formed up in squadron columns at close interval, and the movements began. They lasted nearly an hour and a half without a single halt to dismount, and it is hardly possible to recall the run of them, but I will attempt to do so.

First they moved off at a trot and executed a beautiful wheel in this close order, then wheeled into half-column and moved diagonally with perfect steadiness for about 400 yards; then wheeled back again into squadron columns and opened to full intervals; broke again into half-column, and after another quarter of a mile of this diagonal movement, formed to the front on the leading division and galloped some 200 yards; then broke into column left in front, and, still at a gallop, moved off to the left flank. This gallop in column of divisions was quite the thing of the day, there being five squadrons of 64 files each. The column was but little short of a quarter of a mile long, and consisted of twenty

divisions ("züge"), yet, in spite of its great length, the rear divisions swung along as smoothly as the front ones, and there was no perceptible opening out. After keeping this up in the original direction for 1,500 yards at least, the head of the column changed direction to the left, and when it had gone another 600 yards, as near as I can measure it off a very fair-sized map—which I have every reason to believe to be accurate—the "wheel into line" was sounded, and the whole advanced, still at the same pace, for another 500 yards (making in all close on 3,000 yards at the gallop), and then broke into a trot and eventually halted for a moment's rest. The pace had been so good that I had myself been left behind, and cannot say how the wheel into line was actually carried out; but, judging the final advance from the flank, it seemed to have been carried out with wonderful exactness.

Fresh instructions having been issued, the regiment again broke into column of divisions and disappeared at a trot up one of the broad roads leading through the semi-permanent camp which skirts the drill-ground. Presently we heard the "halt" and the equivalent sound of "troops about" sounded, and immediately after the "gallop" again. About 500 yards from the mouth of the road lay a ridge of low sand-hills, which was evidently supposed to be occupied by infantry, and against these each squadron front-formed and charged as they emerged from the defile. In spite of the ground, which is a heavy sand, rather firmer than that about Lawrencepore, the pace was tremendous, and though the charges were not delivered in quite as well closed order as they might have been, yet, considering the squadrons had already been galloping some distance before they front-formed, the performance, on the whole, was of a very high order. After the charge, the usual mêlée was represented, and two squadrons charged again in capital order without re-forming; then the assembly sounded, and the regiment re-formed in rendezvous formation. They were allowed only a few moments to recover themselves, and then were off again working as a regiment in the front line of a brigade. There were some more diagonal movements in half-column, and then line formed to the front at a gallop with charge mêlée and pursuit *da capo*—about 15 minutes' more drilling with a

formation to the front again from columns already galloping, but with no charge, and then the work was brought to a close by a charge of the regiment in the conventional three lines against a marked enemy—led by an independent leader, who very cleverly threw two of his skeleton squadrons on to the mêlée when the whole of the other regiment was already engaged. At last the regiment halted, and whilst the officers rode out to the critique, the squadrons were once again formed up for the final gallop past. This was very well carried out. The officers having rejoined their troops, the whole, headed by the band, moved off at the gallop. The latter, when level with the saluting point nearly, wheeled off to a flank, and wheeled up again as usual, but playing their instruments and galloping at the same time, and the good old kettledrum horse galloped proudly into his place by an inverse wheel to that of the rest of the band, and pulled up as accurately in his place as any man could have done; and then the squadrons swept by with an even smoothness of motion that left nothing to be desired. The ground was so soft that the beat of the hoofs was hardly audible, and hence there was less of the "pulse of war and passion of wonder" feeling about it than usually fills the hearts of those privileged to see the gallop-past of a British regiment over the hard *maidans* of the East; but, on the other hand, though the pace was as good as it ever ought to be,—viz., 15 miles an hour at least,—the horses were still thoroughly in hand 200 yards beyond the saluting point, and the formation in two ranks distinctly preserved—two points which have too often in India been only conspicuous by their absence at reviews which could be named. This closed the proceedings for the first regiment inspected, and the officers were again fallen out to listen to what I afterwards learnt to have been the most complimentary remarks of the inspecting officer.

The next regiment went through much the same movements, so it is unnecessary to treat it in such detail. However, it struck me as distinctly inferior to the other; and in subsequent conversations with the staff officers of the brigade, I found my idea was confirmed; still it was very good indeed, and would have compared most favorably with the best performances of our own regiments. Only one point

struck me as distinctly inferior to what I have seen in India, and that may perhaps be accounted for by the fact that the inspecting officer was an infantryman, and therefore it was thought safe to go in for a bit of eyewash which could not have escaped a cavalryman's keener perception. I allude to the mélées; they were, on the whole, only indifferently done, though I have seen independent squadrons of the same regiment execute them perfectly some few years ago. But to-day the men stuck together and hardly broke up at all; and I should like to have been able to show the Germans what, for instance, the 11th Bengal Lancers can do in the same line.

The condition of the horses was simply wonderful; for the last three weeks they have been out five times a week at regimental drills, rarely of less duration than five hours from the time of leaving barracks to returning, and, working out the distances with the map and my friends, I cannot put it down below 30 miles a day, in field-day order certainly, but still at a pace which one can only believe when one has seen it. The very day before the inspection the regiment was out $5\frac{1}{2}$ hours; I went to stables to see the horses after they came in, yet they were sleek and fat enough, and none of them showed signs of fatigue. To-day, after our return, I went down again; though they had not dismounted once during the drill, and had been going at full regulation pace of 8 miles an hour trot and 15 gallop, yet they looked as well as possible. How they do it is still a mystery to me. Their allowance of oats is certainly fractionally better than ours, allowing for the smaller size of the horses, and their hay ration considerably smaller—how much so I cannot say off-hand, but must refer my readers to a previous letter on the subject of horses' rations some three months back. I cannot see that their stable management in detail is superior to ours—in fact, I think it is decidedly the reverse; and the only explanation I can offer for the fact is the marked advantage they have over us in being able to keep their remounts till they are rising 7 years before putting them to hard work.

On my way back I had a long conversation apropos of this subject with one of the officers who had himself been in India in 1887, and had seen our cavalry in several stations,

notably in Rawalpindi; and that was the only reason he could assign for what was as evident to him as to me.

A great part of the maneuvers of both regiments were executed on the silent system; it was an extremely still morning, with a light haze hanging, and the sound carried extremely well, as long as they were working by words of command. But when they dispensed with them, the effect of this large mass moving silently over the soft ground, with only a confused jangle of accouterments, was weird in the extreme. And it was astonishing how every movement of the colonel, the senior major, the adjutant, and two trumpeters, riding some 150 yards in front of the line, was followed and obeyed; it was a triumph for the follow-my-leader school; and I for one cannot believe it possible that such movements could have been performed with our "base" system.

I have been told, and indeed can see for myself, that immense improvements have been made in the last seven years; perhaps the limit of the possible attainable with such material has been attained. Recollect that the outside service any man in the ranks can have is only four years, and the majority have only two years and eight months at the outside; that the men are soldiers under compulsion, and not by free will, and the majority are simply incapable of learning to ride really well "because they are not built that way"; and then think what might we not accomplish with our very decided superiority in material, both of horse and man, if only we would condescend to step out of our shells of insular prejudice and adopt a system which is not by any means only German, but which may be said to obtain in the conduct of every civilized business throughout the world except in our army—viz., the decentralization of authority, and the giving to every man according to his rank full power to make the most of what is in him and in the men under him.

Since my last letter I have been out to drills and inspections almost daily. I do not profess to attempt to describe all I saw in detail, but will confine myself to those points that struck me most as likely to be interesting to my readers. The inspection of the cavalry brigade was a sight not easily for-

gotten; the two regiments turned out five squadrons, each from 60 to 64 files—two pretty imposing masses to handle. One of the most noticeable features about the drill was the absolutely simultaneous obedience to the trumpet sounds or words of command. As the last notes of the trumpets still rang in the air, every horse throughout the whole mass moved off at the prescribed pace. When one takes into consideration the fact that the brigade in columns of divisions was about 700 yards long, and that literally as quick as one's eye could sweep from one end of the formation to another the last horse of the body was moving, it will be evident to what perfection they have attained. Equally striking was it to see the regiments in close column of squadrons move off together, and the wheeling of the brigade, in both regiments in this formation, was simply extraordinary, each regiment maintaining its exact shape like a small rectangular block without the least appearance of straggling at the edges; the best-drilled infantry wheeling in quarter-column could not have excelled them.

One of the most startling things I have seen done was an impromptu charge against infantry. To explain it, I must say a word about the ground. It is a large irregular rectangle, about 3,000 yards by 1,500, bounded on the south and east by woods with broad roads cut through them, and on the north by the line of the artillery semi-permanent encampment, whilst to the west it meets with cultivation which may not be ridden over. The soil is a somewhat heavy sand, with a little clay mixed with it, and it is broken by a few gentle undulations hardly perceptible at a distance, but still deep enough to hide even lancers from the eye. The brigade had been trotting up the northern boundary of the camp in column of squadrons in a westerly direction, and had then wheeled half-left into half-column. When the inspecting officer, riding on the central ridge, saw a regiment of infantry just beginning to issue from the skirts of the wood on the south, and to his right rear, he instantly sounded "troops right about," which brought them into half-column, or oblique echelon, exactly in the opposite direction to that in which they had previously been proceeding; then sounded the "gallop" and "line to the front" for the right regiment,

whilst the left one continued its movement in half-column till it got in position to act as support to the first line, which meanwhile swept over the ridge and came down on the infantry so rapidly that hardly 200 men were able to get out of the wood and open fire on them. Two hundred rifles, even repeaters, with barely 300 yards of open to develop their fire on, against 1,000 sabers advancing at full gallop, and therefore under fire for, at the outside, thirty seconds only, could hardly hope for success, and it gave one an idea of how great the opportunities for cavalry which may still arise are, if only the latter can maneuver and their leaders know how to take advantage of the ground properly. Altogether within the week I have seen upwards of twenty charges of the whole brigade in line, sometimes formed from squadron columns already at the gallop, and though occasionally one noticed squadrons a little bit too loose at the moment (supposed) of collision, yet, on the whole, I have seen nothing to alter my opinion as to their immense superiority in this knee-to-knee riding over the performances of our own regiments; and in conversation with the officers I find an absolute agreement amongst them that such riding is only possible with thoroughly broken horses, and where troops are maneuvered on the follow-my-leader system—i. e., where the squadron leaders follow the regimental leaders, and the squadrons regulate their pace and intervals by watching their own leaders, and not by turning their heads towards a directing base.

But by this time most of my readers will have had enough of cavalry for this week, so I will now turn for a short space to the infantry. As I have often pointed out before, the new regulations have introduced but little external change in the drills, except that they no longer march-past at the advance, but at the slope; and that the men have a little more space in the ranks. The reviews present nothing striking, and even in the maneuvers there is but little to change. The new equipment has not yet been served out, though it is in store for almost the whole army now, and the smokeless powder has not made its way down south yet. A propos of this latter, those most likely to know are far from taking the sanguine views of the popular writers about it. There is still more than a question as to its stability, even

under the climatic conditions; and as to its noiselessness, they say it is only less noisy because hitherto it has only been experimented with out of smaller calibers than those generally in use, and that, in point of fact, under similar conditions, it is rather the noisier of the two; and, indeed, since it gives the highest muzzle velocities, it must necessarily be so, for the report of a gun depends on the velocity with which the bullet or other object projected and the particles created by the explosion encounter the particles of air at the muzzle; at least, that is the opinion of experts in sound, such as Tyndall.

One change, however, has been carried out—namely, in the manner of carrying the old equipment—which has conduced to the comfort of the man, if not to his appearance. This is, that the greatcoat is no longer worn horse-collar fashion over the left shoulder, but is rolled over the knapsack, thus relieving the man of a great deal of pressure across the chest, and rendering it easier for him to get under cover and to shoot when lying down. Formerly, too, the helmets were made too straight, they tell me, for a man to shoot lying down. With the coat on the knapsack, the helmet was tilted down over his eyes so that he could not see, as is still the case in our army; but at length a genius arose who discovered how to avoid this by altering the pattern of the head-dress, and the change which has afforded so much relief to the soldier has been carried out. When will a similar farsighted being arise in our own service I wonder? But what the soldier has gained in comfort he has lost in appearance. The rolled great-coat gave the man a look of immense depth of chest and general sturdiness, and misled a great many observers to the opinion that the men actually were thicker set than our own, which statistics show to be decidedly not the case, and which is now evident to everyone.

I saw several attacks delivered, and though none of them were exactly identical in detail, the broad principles were in all the same. As near as possible, the sequence was as follows: The advance guard found the enemy, always a skeleton one, and opened fire upon him, while the troops in rear formed up in quarter-column under cover. The captains were then sent for, and the commander gave his instructions.

Let us assume the attacking force to be a regiment of three battalions; it was generally drawn up with two battalions in first line, and the third in second, and in rear of one of the two wings. The battalion to which the advance guard belonged now received the order to engage the enemy in front, while the two others prepared to attack him in flank. The action of the retaining battalion was very similar to our own ordinary attack—viz., an advance of skirmishers at about four paces interval, the skirmishers advancing in groups of about eight men with an N. C. O., and leaving intervals for reinforcement, not quite as great as the front of one of these sections; the idea being that each section should close on its center as casualties occurred to make room for the reinforcement to come up. Each company formed its own support, whilst a complete company formed the main body or reserve. According to the ground, the advance was either a purely skirmishing one, group by group creeping up as opportunity offered, or, if the terrain was suitable, the whole company front ran forward together till the whole were within about 300 yards of the enemy. Meanwhile the attacking wing had opened out into lines of company columns, two in first, two in second, two in third, and two in fourth line, generally arranged chess-board fashion, or sometimes echeloned outwards, according to the requirements of the case. Each company then threw out a dense line of skirmishers, retaining usually one “zug”—i. e., one-third—in support. The remaining lines followed about 400 to 500 yards in rear of each other—mostly in ordinary two-deep line—with drums and fifes sounding and the men in “parade marsch.” The effect of this was indescribably fine. Viewed from the enemy’s side, the advance seemed perfectly irresistible. The fighting line pressed on to within 600 to 700 yards without firing a shot, it being one of the points chiefly insisted on in Germany that fire should not be opened too soon. Then, however, it began by spurts, as it were; three rounds independent fire; then the whistle was heard, and the whole firing ceased for a moment, and then, a fresh order being given, recommenced. Once or twice in this stage I saw volleys fired; but, as a general rule, volleys in the attack are not believed in. As the supports closed on the fighting line, the latter rose and ran

forward in two echelons only, each rush being for about 100 yards, so that three of them brought the line up to decisive distance from the enemy's muzzles. By this time the supports, and sometimes the main body of the first line, had been absorbed, but always the arrival of the next following line was awaited, and then followed a few moments of perfectly appalling magazine fire. Then the whistles sounded all along the front, and the whole mass threw themselves on the enemy with a cheer. The next line came up, passed through or over the first, and took up the pursuit by firing volleys after the enemy, whilst the remainder rallied with surprising rapidity; and, just as with the cavalry, a fresh operation was undertaken in a new direction with the rallied forces. It was this recommencement of operations at once which principally struck me. With us the rush at the enemy's position is too generally held to be the finale of the day's proceedings, whereas actually it would more often be only the beginning. But one criticism on the German practice I will permit myself, and that is, that to follow the defeated enemy again in extended order seems to me a very dangerous game to play, for it is just at this moment that offensive returns by fresh bodies of troops may be expected, and these will necessarily be made in close order, and through the dust, smoke, and confusion will break on the pursuers with a suddenness which, backed by the magazine rifle, will be more terrible than any bayonet attack of the past. There were many other minor sins of omission and commission which recalled the admirable criticisms of Prince Hohenlohe. Majors and colonels insisted on riding in the front line, instead of commanding from their proper places in rear, and on one occasion I saw two companies brought up to within twenty paces of the fighting line, then within 300 yards of the enemy's position, in column; but, on the whole, one could not help remarking the extraordinary rapidity and swing with which the movements went. None of that dawdling about and delay which is so common on our own drill-grounds, and very far less of the direct interference of the senior officers with their subordinates which tends to whiten the hair of our unfortunate captains.

INDEPENDENT PATROLS.

A pamphlet has recently appeared in Berlin from the pen of the well-known military writer Von der Goltz, author of that excellent work the "Nation in Arms," which has been translated into English more or less indifferently well, and hence has become tolerably familiar in the service.

The object of his present pamphlet is to elucidate the questions connected with smokeless powder and long-range small-arms, and to recommend the formation and training of independent patrols of men picked for their courage and adroitness in true skirmishing, for the purpose of carrying out a closer reconnaissance of the enemy's position than can be executed, according to his views, by the cavalry alone. What it comes to is briefly the formation of a new light division, a special *corps d'élite* chosen from each company of the army, and forming an integral part of it, but liable to be detached and grouped together under the general direction of an officer equally chosen for dash and skill in directing the so-called minor operations of war.

General Von der Goltz's reputation stands so high that it is impossible to suppose that he does not see the obvious difficulties such an organization would entail; such, for instance, as the apparently hopeless difficulty of securing adequate co-operation between the different groups. There must be some way out of them, and his request, not to condemn his plan hastily, deserves that, as far as space permits, he should be allowed to speak for himself. I will put his concluding sentences first, and then follow him through the course of a modern action as it presents itself to him.

"There may no doubt be many circumstances in war in which these patrols could not be employed, or in which we might dispense with them without inconvenience. But at least it will be granted that such bodies, composed of intelligent men, can do no harm to any one. Through them we should raise a portion of the army above the level of the common herd, and create in our companies a kernel of soldiers, reliable and ambitious, always at hand, and who would act, aim, and shoot deliberately with their senses all awake, who would understand patrolling in its highest sense, be able to

make reliable reports, and generally understand the phenomena of war. From such men one could expect a higher sense of duty and a fidelity on which the captains could count in all circumstances. These reasons alone ought to suffice to render it worth our while to select and specially train those who show most aptitude for the work."

To begin now at the beginning: "Those leaders," he writes, "will have the best chance of success who can succeed in bringing up their troops into the enemy's position, in compact tactical units and without having suffered considerable loss. The power of modern fire-arms, even at extreme ranges, is so considerable, that even lines of skirmishers will find themselves exposed to heavy loss from the moment the ground ceases to give them any cover, and be able to inflict very little indeed in return on the enemy, owing to the smallness of the target he exposes. Hence, just as at the commencement of the century skirmishers had to precede the column to draw off the enemy's attention, so is it necessary to interpose a similar buffer between the dense lines of skirmishers and their foe.

"The greatest caution must be observed before committing these dense and not very manageable fighting lines to an action; it is absolutely essential to wait till our artillery has established its superiority, and pending that, the fight must be maintained by groups numerically weak, but composed of picked men, whose steady aimed fire will absorb the attention of the adversary."

In fact, so far these independent patrols will fulfil exactly the role of the light companies and light division of the Peninsula days, the only difference being in their organization, which he now proceeds to explain:

"The leaders and men of these patrols must receive in peace a specialized instruction. Each 'zug' of a company will furnish one of them, consisting of a non-commissioned officer and eight men, whose packs will, wherever feasible, be carried for them, they themselves carrying only their ammunition and rations; the latter to enable them to get along even if separated for a couple of days from their companies.

"They will not be employed for the immediate protection of their own companies—that duty will continue to devolve on the ordinary patrols; but they will be used to carry on special missions ordered by the officer in command of the whole body of troops to which at the time they belong."

Let us follow now in detail the method of their employment he proposes. The cavalry division having established the region in which the enemy is moving, clears the front and leaves the two armies in the presence and within striking distance of one another; the immediate necessity is to establish precisely the position to be attacked. In first line this duty devolves on the divisional cavalry (which is unfortunate for us, as we have now reduced ours to only one squadron per division, altogether too small a proportion), but a man and horse offer too good a target and finds too great difficulty in getting cover to be counted on to get within less than 1,000 yards of the enemy, if as near, and once within the zone in which with the best will in the world they cannot hold out any longer, they must be relieved of their duties by these independent infantry patrols, who will simply "stalk" the enemy, brush away any small outposts meant to keep off intruding cavalry and scouts, and fix in detail the exact outline of the enemy's position. On the importance of this information to the leader before he determines on his line of attack it is unnecessary to dwell. Hitherto this duty has been undertaken by the advance guard, and even in 1870 it was found that the nature and composition of ordinary troops of the line could not be trusted to carry it through.

Instead of "stalking" the enemy, they went for him straight, became involved in a decisive engagement, and instead of the following troops benefiting by the result of the intelligence secured, they had to be sacrificed to make good the previous blunders. The essential point of difference, therefore, lies in that the action of the patrols does not force the hand of the commander. The risks they run are proportionately great, and for that purpose the men must be specially selected for courage and skill as skirmishers in the old sense of the word; and in this skill they will find the best means of reducing their losses.

Meanwhile and under cover of these patrols the artillery

comes up into position, and as the skirmishing action in front does not commit any one to decisive fighting, they can set about the work of "ranging" with greater coolness and deliberation, which is all the more important because smoke-clouds no longer expose the position of the enemy's guns. Even the flash, which with the new powder is peculiarly vivid, no longer betrays them, since the method of indirect laying has reached its present perfection.

"At the present moment authorities are not agreed whether artillery should be assigned to the advance guard or not. For us the question is without importance as soon as we have settled the question how the advance guard should be employed. Its commander is authorized to seize whatever chances offer themselves by taking the initiative boldly. For this purpose he requires the guns. If, for instance, it is necessary to seize a village or a defile, he requires their support. If he meets the enemy advancing in force, he must put in every gun at his disposal to check them. But if, on the other hand, the enemy is found in position, it is his duty not to commit his troops; otherwise he would be forcing the hand of the chief commander, who would thereby lose all freedom of action, and this will be the necessary consequence of engaging either guns or infantry too soon. The independent patrols afford him a means of avoiding both faults.

"Once the batteries have come into action, and the direction of the attack decided on, they must reduce the guns of the adversary to silence, and then endeavor to shake his infantry as much as possible.

"Their fire must be kept up over the heads of the advancing lines as long as possible, and when at last it is impossible to distinguish friend from foe, a couple of turns of the elevating screw should send the shells crashing into any advancing reserves the latter may be bringing up, whether visible or not. They should be there, and if they are not, it is just one of the few cases where it is better to waste the shells on the chance.

"The use of these independent patrols will, however, immensely strengthen the hands of the side which through want of numbers, or the configuration of the ground, is compelled to adopt a defensive or offensive attitude. Behind

the screen formed by them, a line of guns may be drawn up, whilst the bulk of the forces are held in reserve and in position on another front. Look at the case from the point of view of the assailant acting in the ordinary method. His cavalry have received a heavy fire of infantry and artillery apparently in position facing, say, northwest. The advance-guard batteries come into action and the following infantry are drawn up for attack and committed to an advance. Formerly it was possible to tell from the puffs of smoke approximately in what strength the infantry were present—a rapid fire from a small number of rifles betrayed itself; now one is no longer able to judge whether the rifles are few or many. As the attack develops, the line falls back, and the guns disappear suddenly, unmasking a fresh position facing west, and the assailant finds himself compelled to change front under effective fire. What that implies, those who were present in 1870 can form an opinion."

It seems to me that the author is in this case—and, indeed, throughout—making rather too sure of the invisibility of the new powder. This method of action was, I believe, perfectly feasible even with ordinary powder; and, indeed, I have often recommended it in these columns with reference to the necessity of keeping up the true light infantry principles of skirmishing in contradistinction to the hybrid form of individual-order fighting, which is neither fish, flesh, nor fowl, and which finds its expression in our normal attack formations as practised on our drill-grounds. The smokeless powder did not strike me last autumn in Germany as so very invisible. True, there were no puffs of smoke, but there were many conditions of background, wind, and atmosphere, which, skillfully taken advantage of, as they should be by good skirmishers, rendered the blank cartridges of the old powder quite as invisible as those of the new. Indeed, I saw a case in point at Niederbronn this year, in which, the morning haze still hanging, but very lightly, myself and three other British officers watching a line of skirmishers firing, decided they were using smokeless powder when actually they had only the old one, and again later in the day, when the mist had lifted and a fresh breeze sprang up, we made the same mistake with another body of

troops, and went away under the firm conviction that we had seen a very successful experiment with the new powder and knew all about it, and were not a little sold when we learnt our mistake from the German officers in the evening. It is, however, only just to ourselves to add that there had been very little firing, and that, too, exclusively by the masked enemy, who were very widely extended. The attacking force being only exercised in preliminary movements, practising the battalion commanders in the use of the ground as cover from sight, and in moving through some woods, the "cease fire" always sounding as soon as the time for deployment arrived.

But subsequently, on the drill-ground at Frescate near Metz, where I saw the new powder used by three different brigades independently, so that there was nothing to guide one's eye to the likely places from which to expect the fire,—an advantage one always has when working against an enemy,—I came to a very different conclusion to that of my author. It seemed to me that there was no mistaking the flash of discharge of the new cartridges. Poets are apt to talk of the dewdrops sparkling like jewels on the sward, but they refer to the sward immediately at one's feet, and not a thousand yards away. When, however, a bright scintillating line of jewel-like sparkles is suddenly drawn right across the mass of a brown hillside, and when, as would be the case in war, the whole air is the next moment alive with a noise like a myriad nightmare mosquitoes, singing past one's ears, and the ground at one's feet is simultaneously torn up in long furrows pointing in a given direction, there can be very little doubt what the scintillating line just seen really means. I think that day I must have seen the new powder against every conceivable kind of background, from the dark edge of a wood, the border of a village, across the face of a hill, and the line of a hedge, but in all cases, the bright line of flashes betrayed themselves at least as well as the puffs of smoke of even full charges would have done. A properly trained reconnoitering officer would have had no difficulty at all in seeing through any ruse of the kind above mentioned: for, even without the aid he possesses in the knowledge of the direction in which to look, which would have been sup-

plied if by chance he did not know it by the graze of the bullets, and the possession of a map by the aid of which his soldierly instinct should have taught him whence to expect the fire, I found no difficulty in distinguishing the various fighting lines, though three independent battles were raging around me, and two of them were more than two miles distant. I cannot help thinking that the case for independent patrols, or, at any rate, trained light infantry, whether organized as light companies or as a whole division, would have been rendered even stronger had their claims been put forward solely on the results of 1870, and not as a consequence of the new factor.

A MODERN BATTLE.

In continuation of my remarks on Von der Goltz's "Independent Patrols," I propose to give almost in full his description of a modern battle, as it will probably shape itself with the new weapons and powder now in use.

The advance patrols of cavalry having established the presence of the enemy on a given line and the points on which his flanks rest, the general officer in command will have to decide, while still at a distance of perhaps a day's march, whether to attack straight to his front or to attempt to maneuver the enemy out of his position. The length of front occupied gives an approximate indication of the enemy's strength, and its position on the map also reveals in part the enemy's design, but for the rest the general's own knowledge of the situation and of the nature of his adversary must suffice for his first decision. Let us assume that he elects for the direct attack; possibly the strategic situation leaves him no choice. Before committing his troops, a detail reconnaissance is necessary. "More than ever care is required in this operation, for the enemy, no longer betrayed by the tell-tale puffs of smoke, will have taken advantage of every possible means of cover to mislead the assailant and induce him to deploy for action on a false direction." How fatal such a mistake was, and how easy, even in 1870, the destruction of Von Wedell's Brigade (38th) at Mars-la-Tour and the action of the 9th Corps and the Guards at St. Privat amply show.

Standing on the spur of the hill running out from Amanvillers, and on which the first batteries of the former corps unlimbered—to surprise the French, and were themselves surprised by receiving fire in return from three sides—one could not help being struck with the value of the smokeless powder, assuming its invisibility to be as great as it is usually claimed that it is. It must have been bad enough to stand there and see the smoke-puffs surrounding one round three-fourths of the total horizon. What it would have been like with nothing to indicate the origin of the storm which suddenly tore open the ground in apparently every direction beneath one's feet one can hardly conceive. That initial blunder entailed as a consequence all subsequent ones, including the premature engagement of the Guard, and against a capable general should have caused the Germans the loss of the day, and probably did cost them some 10,000 killed and wounded. What under modern conditions it might imply can be better imagined than described, and no precaution which could guard against it ought to be neglected. But, as previously pointed out, the existing organization furnishes no satisfactory way out of the difficulty. The German cavalry in 1870 was not wanting in dash and self-sacrifice, yet in each of the above instances their action did not suffice. The advance guards were daring enough, but it was precisely that daring that did the harm. The "independent patrol" of picked brave men is the only way out of the difficulty.

"The current idea (in Germany) is to deploy opposite all the points of the enemy's position which seem to require attention a line of companies, each of which sends out a section or half-section to draw the enemy's fire and then detect his disposition.

"But consider the formation of these units on a war footing: are they suited for the purpose? The whole company will probably only have one officer of the age and experience requisite; the reserve officers and the bulk of the men will be entirely unsuited for it. Besides, the body itself is too large a target, and will probably be shot to pieces by invisible foes before it gets within 1,000 yards of the position, where they will lie down, waste their ammunition, and event-

ually, if not supported, bolt back, carrying demoralization everywhere.

"No! This is essentially a field in which only exceptional skill and courage combined can be of any avail; and the combination being but rare, those men who have it must be carefully trained and set aside for this special purpose. The general officer in command will personally dispose of the patrols furnished by the advance guard, who will, having received their instructions, advance with the greatest caution. If the enemy opens on them with volleys at distances over 1,000 yards, the results are likely to be infinitesimal, and in any case the position of these patrols cannot become specially critical, as the enemy is not likely to come out of his trenches for the purpose of attacking them, and they will be too small a target to employ cavalry against.

"Under protection of this chain of patrols, the officers of the staff and of the cavalry, provided with good field-glasses, execute their reconnaissance, taking advantage of every good point of observation the ground offers; whilst officers' patrols from the cavalry seek to penetrate round the flanks and in rear of the enemy.

"On the information thus collected, the commanding general chooses the front attack. This front should fulfil the following conditions: (1) space to bring into action a larger number of guns than can be opposed to us by the enemy—the larger the better; (2) concealed lines of approach to the enemy's position; (3) and under no circumstances should we run the risk of exposing our guns or infantry to concentric fire, but, on the contrary, should seek always to bring convergent fire against the enemy.

"The choice having been made, every available gun is brought into action and the artillery duel commences. Too much importance cannot be attached to this phase of the battle, for, if the assailant fails to establish his superiority, his infantry has no hope of success.

"Unfortunately, owing to want of time in the maneuvers and an insufficient supply of blank ammunition, it is impossible to give a fair representation of this part of the action; but it is most important that this abridgement of the proceedings does not lead to any misconception on the part of

the infantry officers, who must realize, once for all, that, with an approximate equality between troops, it is only the combined action of the two arms which can ensure the result.

"The enormous increase in the power of the guns renders it essential that the utmost solicitude and watchfulness should be devoted to its training, for in no other arm can faults or neglect in instruction entail such terrible consequences. Not only must it be technically perfect, but it must be commanded by first-class men, and on mobilization undergo the least changes possible. Batteries formed only on the outbreak of war are more useless than any similar formations of other arms can possibly be, and their value generally varies in inverse proportion with the number of strange officers, men, and untrained horses they have to absorb on mobilization."

The above passage, I may add in passing, is meant as a particular hit at the present war administration in Germany, which has allowed its artillery in these respects to fall far behind the French standard in immediate readiness for the field.

"While the combat of artillery is proceeding, the infantry form up in rendezvous formation under cover, and make all disposition for the coming attack, such as getting some food, issuing extra ammunition, and stacking their packs, which will now generally be left behind. As each fresh battalion arrives, its independent patrols fall out, and are sent up to reinforce the line already engaged, and which, by true skirmishing tactics, seeks to injure the enemy and approach his position as closely as possible.

"At length, the enemy's artillery having been reduced to silence, and the fire of our guns turned on his infantry for a sufficient time, the signal to advance to the attack is given, and the first line, a dense chain of skirmishers, breaks cover, and, without firing a shot in reply, seeks to press up to the limit reached by the independent patrols, say 600 yards."

Against such a target the defender, firing untroubled by smoke and at known distances, ought to make splendid practice; in fact, it is scarcely conceivable that a sufficient number of the assailants could survive the ordeal, unless the nerves of the defenders have been already unsteadied by the

combined action of the infantry patrols and the artillery, and it is very much the custom at present in England to underrate the assailant's prospects of securing this result. Certainly, given our long-service soldiers and our racial characteristics, there is every reason to believe that now, as formerly, we should stand pounding longer than any other nation; but again it is only a question of time, and ultimately the defender must collapse. Let us put ourselves in his place.

"For several hours his infantry, strung up to the highest pitch of expectation and anxiety as to what is coming, has been lying in its trenches. Occasional weak bodies of the enemy's cavalry have been seen, and a distant and desultory fire has been carried on against hardly visible patrols, impossible to hit, but steadily creeping in closer and closer. Then of a sudden, from out of the sky, so to speak, a storm of bursting shells has filled the air, whose smoke conceals from the eyes of the infantry the light cloud of dust, with possibly occasional flashes—all there is to betray the position of the guns from which they are fired.

"Their own artillery is being sensibly overpowered, and is seen to be moving to the rear. Suddenly the intensity of the enemy's fire is redoubled, and the noise of the bursting shells, together with their destructive effects, produces rapidly most disastrous effects on the nerves of the defenders. The need of reinforcement in the fighting line becomes urgent, but the ground behind it is so swept by the enemy's fire that body after body attempting to move forward is beaten back, and only the débris of a few partially successful efforts ever reaches the front.

"It is just at this moment that the fighting line of the assailant makes its appearance, anywhere between 2,000 and 1,000 yards distant. If the officers on the defenders' side can succeed in distracting the attention of their men from the terrible spectacle of the vain efforts of their supports to succor them, and in concentrating it on the advancing enemy, that will be about as much as can be expected, and their fire will hardly be as carefully directed as the theorists of the practice-ground are in the habit of assuming. But if, on the contrary, our artillery fails in its task, and the infantry ad-

vances without the intermediate buffer formed by our independent patrols with their carefully aimed fire, then the hope of pressing in to 600 yards without firing a shot is illusory.

"Let us, however, continue the former picture. The carefully aimed fire of the patrols is suddenly reinforced by the rapid fire of the fighting line, and, covered by this, a second line advances at somewhere about 1,000 yards' distance. If the first line reached its position without serious loss, it is evident that the second will suffer even less, and its unexpected energy will suffice to shove forward the whole line another 100 yards or so.

"Then, and another 1,000 yards behind, appear the real assaulting troops with fixed bayonets, meant as a visible sign to the men themselves of what is now expected of them. With drums beating and colors flying, the bands playing the most inspiring of our national war-songs, the battalions advance as in review order, animated with only one sentiment, to conquer or die."

The author no longer proposes to push into 200 yards before commencing the "fire of decision," but hopes to be able to effect all that was formerly expected at this range, thanks to the flatter trajectory of the new weapons, at 400. The subsequent steps call for no further remark. The storming troops pursue the enemy to the further limit of the position with the bayonet, and beyond by fire, and cavalry and artillery gallop up to complete the rout.

This picture only differs from that drawn by Meckel, and which was reproduced in these columns a few weeks ago, in so far that the latter assumed a considerably higher degree of resistance on the part of the enemy, and provided for it by a larger number of successive lines. He also proposed to march his actual fighting line up to the range at which fire is opened—i. e., 600 yards—in close order, whereas Von der Goltz, in spite of his independent patrols covering the advance, speaks of his fighting line advancing "extended."

Meckel is looked on as the extreme exponent of the close-order school in Germany, and Von der Goltz belongs to the moderates, but in this case it is difficult to see wherein lies the advantage, if any, of the individual or extended-order formation. The task set them is to cover 1,400 yards under

fire without check and without replying. The chain is a "dense one," so as a target it is as vulnerable as an ordinary line; but in which would the men be most amenable to discipline and least likely to shoot their friends the independent patrols, from the rear, whether the line should be in single rank or double, is another question, dependent on the quality of the troops, the point being that the spirit of the close-order school should be observed.

Making, however, this "correction"—I beg his pardon, "alteration"—in the above, in what single point, except distances, does the form above suggested differ from the old Peninsula tradition, or its still earlier prototype, Frederick the Great's line formations at the close of the Seven Years' War? Of the two, it is really nearer the latter, for Frederick's "Freischaaren" were a much closer approximation to the "independent patrol" idea than our own Light Division; for the "Freischaaren" consisted of small parties of privileged blackguards, whose real object was plunder, and into whose actions, provided they did the light infantry duty of the army bravely, no one inquired too closely. Organized in small squads under a leader of their own choice, they hung on the skirts of the army, and acted as a screen against the Pandours and Croats of the Austrians, so that, except in so far as Von der Goltz's patrols are to be animated by patriotism instead of a desire for loot, the two ideas cover one another pretty exactly. Whether the further step involved in grouping those patrols together to form a division is advisable, is open to discussion. But the point involved for us remains this: after twenty years of hot controversy, and the introduction of a dozen new weapons of destruction, each more terrible than the other, one of the leading minds in Germany, with ample war experience and an enormous backing of educated opinion, lays down as his conception of the method in which an attack can alone be carried out, to all intents and purposes the exact equivalent of the way we should have attacked in 1870, had we been called on to do so—viz., two or more successive lines covered by real skirmishers and preceded by a heavy artillery fire. As each successive improvement in fire-arms was introduced, all that was necessary was to add on a hundred yards or so to the distances, and this is

about what the Duke of Cambridge and the survivors of the Mutiny and Sikh Wars would have done had they been allowed their own way. But the young generation of the time was too clever for this by half; they mistook cause for effect, and worshiped the rising sun of success. The battle-fields of 1870 were principally conspicuous for clouds of skirmishers (and stragglers), the Germans won—ergo, skirmishers were a good thing and must be copied at once; but it escaped these gentlemen that the French also skirmished, and, on the whole, with greater adroitness, but were nevertheless defeated. The Germans themselves, notably the highest authorities, knew all along that the presence of skirmishers in such quantities was the effect of too short a training and want of absolute discipline, and have sought by every means in their power to obviate the latter effect.

It is inconceivable to me that H. R. H. the Duke of Cambridge, with his constant opportunities of hearing German views from the very highest sources, could have remained ignorant of what was in their minds; indeed, I know, from having heard many of his "critiques" at Aldershot and elsewhere, that he was all along fully alive to them. Only his words fell on deaf ears—or, rather, on hearing organs too dull to catch the true vibrations—and he was openly abused in the press by the scribblers as a fifth wheel to the coach, an old drill sergeant, etc.; yet which system would have advanced us the furthest? The troops of twenty years ago at least knew how to obey orders, and would have marched unhesitatingly to death if told to. With such men a leader might have achieved anything, for it rests with the judgment of the leader, and can only be estimated by him, when and where to strike the necessary blow. Will the infantry of to-day, taught to look on a direct advance across the open as certain slaughter, prove themselves as reliable a weapon to trust to? Fortunately, the drivel of the text-books has not really made much impression on the rank and file, or even on the subaltern officer; they are still British, and look on the matter from a very common-sense side, and if only there were a few more "Mulvanneys" in the ranks, we should not be in danger of going far wrong. The danger really lies in the higher ranks, who have been trained in the reformers'

school; and the difficulty is that amongst these men there are very many of great ability, who have devoted much time and thought to the matter, and whose conclusions logically follow from their premises. But the premises themselves are false, and it is almost impossible to bring this home to them.

Within the last few years there has sprung up in England what may be called a new tactical cult, the cult of the "Prussian Official," which is believed by the sect to be verbally inspired, like the Bible. They search this scripture diligently day by day, and deduce strictly logical conclusions from its data, but all the while they are drifting further and further away from real knowledge, for the assumption always underlies their work that "It was done in 1870, therefore it is right," whereas in Germany they would say, "It was done in 1870, therefore the presumption is, it is wrong."

STUDY OF A MODERN BATTLE.

A third edition of Colonel Meckel's work on tactics and the leading of troops in the field has recently appeared in Berlin. The author is an officer of the general staff, and is well known as the supporter of the extreme conservative school of tactics; indeed, he has at last admitted that he wrote the celebrated "Midsummer-Night's Dream," about which of late we have heard so much, but with the qualification that he had purposely pushed his argument to its furthest length in order to attract attention and secure discussion, in both of which he has been undeniably successful. But in his book he takes a far less advanced position, and one which I cannot help thinking will commend itself specially to the regimental officers of our own service. I propose, therefore, to give almost in extenso the picture he draws of the probable course of a modern battle, so that each reader can form an opinion for himself as to the best method of training troops to undertake the greatest and most serious duty that can fall to their lot—viz., the frontal attack of a position over almost completely open ground.

The strength of the army—or, rather, of the section of it which he is considering—is five corps, and the field of

action the well-known glacis-like slope of St. Privat le Montagne, which presents in its extremest form perhaps the most disadvantageous conditions for the attack which can reasonably be conceived. The two armies are supposed to have arrived within striking distance of one another over night, so that the troops may be ranged in their proper order, and the course of the whole action regulated in so far as such regulation is possible. All movements take place across country, and the troops are not confined to defiling along the roads. The duty of determining the extension of the enemy's line, and its occupation, falls, of course, primarily to the cavalry; but as the two armies approach each other, the latter must clear the front and form up on the wings; at least one division, however, joining the general reserve for special employment by the commander-in-chief himself.

"The approach to the battle-field is carried out in rendezvous formation—i. e., in the old double company column of battalions; the corps in the center being formed with the divisions in mass and side by side. Those on the flanks are in line of battalion columns, and one division in front of the other or in echelon to it to cover flanks. The advance guards of the separate columns take up position outside of the effective artillery range of the enemy to cover the deployment of the columns. And in order to determine the exact position of the enemy, the batteries attached to these advanced guards, reinforced if necessary by the divisional artillery, open fire at long range (not less than 2,500 yards) to compel his reply; but in this stage of the proceedings a reckless and hasty advance to decisive range is specially to be avoided. The time which will be required to get all the columns into their proper place must be utilized in the reconnaissance of the ground to the front, and especially of any undulations which may give cover to the advance; precautions which, be it noted in passing, were conspicuously neglected in the last war by the 38th Brigade at Mars-la-Tour and the Guards at St. Privat.

"All being at length in readiness, and the first section of the ground to be taken up to cover the position of the guns for the artillery duel having been indicated, a simultaneous advance on the whole front should be made, in small col-

umns covered by skirmishers. This first position should be outside the zone of effective infantry fire, but, where possible, near enough to allow the infantry to support the artillery by means of long-range fire. It must be selected with due reference to the cover afforded either by the ground or by villages, copses, etc., and, as soon as reached, defensive arrangements with pick and spade should be undertaken to strengthen it. Where the enemy has himself occupied advanced positions which nearly coincide with this line,—such, for instance, as St. Marie aux Chênes in front of St. Privat,—the capture of such places, for which special bodies of troops will be detailed, forms part of this operation, and the whole power of the available artillery should be brought to bear on them from positions outside of the range of the enemy's guns in the main position. But the troops to which such tasks are assigned must be particularly cautioned not to go beyond the further limit of these positions.

"Then follows the artillery duel and preparation, and for this purpose every available gun for which room can be found must be brought up, even from the corps and divisions in reserve, and only after the fire of the enemy's guns has been completely reduced, is the preparatory fire on their infantry to be begun."

This is a point round which many controversies and disputes rage in England; yet I think, if the matter is closely gone into, the difficulties will mostly be found to vanish. There is no royal road to victory, and mistakes may and must happen. The defender's artillery, for instance, may prove the stronger of the two, and in that case the rôles change over—the would-be assailant will find himself attacked. It has happened—as, for instance, at Gettysburg—that the defender's artillery has intentionally ceased firing to economize ammunition and then again come into action the moment the attacking infantry broke ground, and it is frequently recommended in text-books that the defender's guns, when it is found that they are being overpowered, should be withdrawn under cover till the time for the assault approaches. But both these courses are only possible where the assailant gives himself away by overhastiness, for, when once the artillery fire of the defence ceases, the work of destroying the in-

fantry may proceed with all necessary deliberation; and then, when the latter have had their spirit completely broken, the reappearance of the artillery will have little or no effect on the decision, for, whatever their power may be against infantry alone, against victorious infantry and guns as well they can have no ultimate chance of success whatever. It therefore follows that guns once committed to a decisive struggle can never be withdrawn, but must be fought to the last; at any rate, their resistance gains time, and time may mean the arrival of fresh reserves, or, if the day is growing short, strategic reasons may compel the assailant to risk an assault without waiting for the proper completion of the preparation. All this, however, is a digression from Meckel's text, for, as no one questions the correctness of these ideas in Germany, he does not consider it necessary to allude to them.

"As soon, therefore, as the artillery fire has had its effect, a general move forward of all the arms takes place. The advanced infantry is reinforced, the hitherto retained reserves of the leading corps advance by brigades, up to the limit of effective infantry fire, and need not fear to cross open spaces previously swept by artillery fire. Taking advantage of all possible cover, they take up positions either on the flanks, or not less than 500 yards in rear of the artillery lines. The divisional cavalry approaches the front line of the infantry as far as the available cover permits it to do so, and the cavalry division is placed under cover, of course, in a position from whence it may eventually be employed in the most advantageous manner and has the best field of advance.

"The batteries advance to closer ranges, and, whilst firing on the infantry, remain ready to crush any fresh guns the enemy may bring into action. And now, out of the previously arranged line of shelter, the fighting line of the infantry commences its advance, on a broader front and in a denser line. It is not yet the assault, but an advance borne forward, if necessary, by fresh reinforcements to the limit of effective aimed fire. As the bursting shells of the artillery diminish at any particular point the intensity of the enemy's infantry fire, the part of the line immediately opposed to it rises and presses in. As resistance increases by the addition

of fresh reserves to the enemy's line, it will probably fall back till the balance is re-dressed by fresh supports from the rear, and the result will be the long undulating lines of fire, which were so characteristic of the battles of 1870.

"The impulse for the final assault may be given by a counter-attack by the enemy. There are armies which can not bear the punishment such a fire-fight implies, passively, and these will break out to the front to get breathing-room. Such a proceeding can only be welcome to the assailant. Whilst the gunners and infantry overwhelm the advancing line with fire, the nearest reserves are brought up with drums beating, in close order, to give the necessary impulse for a counter-assault, and the divisional cavalry follows up to cut in as opportunity offers. Even a whole brigade or division, handy enough to find room to get through the infantry line, may in such cases be the first into the enemy's position.

"But if the defender remains inactive, the point to be assaulted is selected by the commander-in-chief, who brings up a couple of divisions from the corps in reserve under cover and at hand either to follow the assaulting troops in second line or to take part in the attack in first line, as the conditions of the moment may require. The corps on either side will support the attack, but must guard against letting the whole of their reserves out of hand.

"The assault is then delivered—in united closed front of whole brigades—possibly even of divisions. The use of cover has no longer any value; to try and avail oneself of it would destroy the unity of the assault. The brigades must now advance straight across the open country. It is as impossible to avoid passing through artillery lines as it is for the latter to avoid firing over the infantry; both must co-operate together up to the last, and there is no room to establish this co-operation in any other way. The mass of the artillery will maintain its position for the present, but a proportion of batteries must limber up and accompany the advance.

"In arranging the infantry for the advance, depth of formation is the principal point to be borne in mind. A gradual increase in the fire power and of momentum up to its

utmost possible limit must be secured by fresh reinforcements from the rear. With this object in view, a brigade (i. e., two regiments of three battalions each) would best be formed in the following manner—viz., regiments side by side, with one battalion each in the front line, and each of these battalions will have three companies in the fighting line and one following some 500 yards in rear. The companies will be formed with two “zugs” in front and one in immediate support, and the “zugs” will be in line in single rank, with the files just sufficiently lessened to allow of the use of the rifle to the best effect. The battalions in second line follow some 500 yards behind the supports of the first, and again 300 yards behind follow the brigade reserves, so that, as a rule, the latter will not leave their cover till the fighting line is in hottest action with the enemy. The advance takes place with drums beating, and, in the case of the brigade reserves, with bands playing. Without checking for a moment, the fighting line moves up, if possible, to decisive range at once. If, however, fresh reinforcements on the enemy’s side causes a halt, the company and battalion supports are at hand to carry the line on, and the gunners make use of the temporary check to deliver a couple of rounds of rapid fire, increasing their elevation by a couple of hundred yards; if, owing to the nature of the ground, the advancing infantry has already masked their target, these shells will seriously interfere with the bringing up of the enemy’s reserves.

“The rearward bodies of infantry remain in uninterrupted forward motion, so that—and the above distances are based on this consideration—every time after four or five minutes’ rapid fire, the leading line receives the impulse to advance from the fresh advancing troops behind. Thus step by step the wave of the attack rises, till at last, by constant accession of strength from the rear, its momentum can no longer be restrained, and it must break through to the front.”

Here victory is achieved, not by absence of order, not through the initiative of the subordinate ranks, not by skulking under cover, but mainly as the result of careful peace-time training in absolute discipline; in fact, as Clausewitz put it, by teaching the soldier “to know how to die, and not how to avoid dying.” It seems unnecessary to pursue the

course of the battle further. It is not intended to be understood as the only possible type of a pitched battle, but only to indicate the direction in which progress is to be sought, and to warn against some modern and dangerous tendencies, to point out clearly to leaders of all three arms the object they must keep in mind, and to show how on their co-operation the solution of the battle problem depends.

"Looking back on the past, we see quite another picture. The pitiable self-destructive belief in the unavoidable disorder and the impossibility of guiding the fighting instincts of the individual finds in the events of twenty years its own condemnation. There, too, we heard the drums beating, and saw the colors waving, and whole brigades dashing recklessly across the open, only, however, to break to pieces against the unshaken fire power of the adversary, and then every trace of order disappeared in the confusion of the independent order of fighting. Woods, villages, hollows hitherto empty were suddenly crowded with stragglers, and the open fields lay tenanted only by the victims of premature violence. But reverse the order of the proceeding, let the thunder of the guns go before the beat of the drums, the roar of musketry before the bayonet, and skirmishing in its old signification before the assault, and not follow after it, and the fight will again assume a healthy aspect."

A few lines of explanation may perhaps make some of the allusions in the latter paragraph and the general idea of the whole thing clearer. Meckel belongs essentially to the school of tacticians who consider that the "Prussian Official" history of the war should be studied, not in order to be copied, but in order to learn what should be avoided. Unfortunately, the modern school in England for the last twenty years has adopted the former course, and, indeed, has raised the book almost to the position of a divine inspiration, no word of which is to be questioned. Everything that happened on the battle-fields is believed to have been previously thought out and arranged, and not to have been, as it too often happened, the result of circumstances beyond the control of the leaders. Skirmishers were a leading characteristic of the combats, and therefore we are taught that skirmishing alone is of any avail; but, as Meckel points out,

these skirmishing lines were formed as a result of bad leading, and not of design. The troops showed themselves adepts in availing themselves of cover (10,000 men managing to get out of sight and out of control in a little wood of not more than 1,000 by 600 yards area; about the same number are said to have taken shelter behind a wretched farm-house, which would have been amply garrisoned by 200); therefore we too must train our men to avoid exposure, and so on, through the whole list; and the worst of it is that these views have been so persistently hammered into people's heads that there is now in existence an English tactical school based almost entirely on hearsay, and not on experience, which holds in almost every respect views diametrically opposed to those held by the men who actually were there and know what happened; and this school will soon have almost the whole training of our infantry in its hands, for it originated primarily in the competitive system of study for marks at the Staff College. In saying this I do not wish to be understood as belonging to those who habitually sneer at that institution, its products and its professors; for, though a certain number of the "products" may justify the unkind remarks made about them, the army itself, and the spirit which tolerates the sending of men obviously unsuited for staff duties from regiments to compete for admission, is primarily responsible. The evil I allude to is due to quite another cause, in itself highly creditable to its victims—viz., the keenness of desire for personal distinction, which leads to too close a study of pamphlet literature and the "Prussian Official," both of which are dangerous except to those who possess, through the men who were there, the key to a proper understanding of them.

The divergence between the German school, as taught in its new regulations and practiced on the drill-ground, and the stereotyped way in which our own field-exercises are applied at Aldershot, or any other tactical center, is simply astounding, not so much as regards the form as the spirit which underlies it. With us the "form" is everything; it is a kind of fetish which we worship, believing it will show us everywhere the road to victory with a minimum of losses; or, indeed, one might drop the idea of victory altogether and say that it will enable us to fight without getting killed; and

we believe that somewhere or other there exists an ideal form which will suit all cases.

The object of Meckel's writings is to prove that no such form does or can exist, but that the German Regulations are correct in prohibiting the employment of such stereotyped forms, and fixing on each commander, according to his station, the responsibility of adopting the means at his disposal to the end in view. In Germany, where the principle of the delegation of responsibility has long been an accomplished fact, the only difficulty to be encountered is the inertia of individuals in peace-time, who naturally prefer to have their thinking done for them. But with us not only doesthis same difficulty exist, but also the far graver one which results from our officers not having been trained to exercise this responsibility in each successive rank they have held. Sooner or later, if we are to continue to exist as a fighting force, this difficulty will have to be faced, and now, when we have a reasonable chance of a few years' peace, and our junior officers in Burma have so brilliantly asserted their claims to be trusted, would seem to me the best time for making the experiment.

ATTACK OR DEFENCE.

A former letter was devoted to the consideration of the statistics the German general staff have recently published for the avowed purpose of proving that, weight for weight, or numbers for numbers, their men could thrash the French without calling in the aid of the staff at all; for, as the figures showed on several occasions, even when better leading had placed a large numerical superiority on the ground, the action was carried through and won with a force inferior in numbers to that opposed to them. But, though perfectly willing to agree in the main with their conclusion, it appears to me that they have succeeded in proving too much, and, in attributing their victories entirely to the fighting value of their troops, have ignored too much the superiority they acquired by their almost invariable use of the offensive, and the force they derived from the better co-operation of the two arms—viz., the artillery and infantry. As I have stated,

I think the evidence distinctly does prove the individual superiority of the German soldier, in spite of the inferiority of his infantry armament, over the French one in the year 1870. But it is impossible to ignore the facts that on many an occasion in the Napoleonic era the reverse was equally well established, and that fifty years before that again Frederick the Great's Prussians were as much superior to the Frenchman of that day as in 1806 they were the contrary. Therefore, I take it, it follows that the raw material from which the troops were created have in all three eras been relatively about equal, and the reasons for their changing qualities as trained soldiers must be sought for in other causes, such as the difference in training of the troops, the different forms of fighting, and the greater or less co-operation between the three arms. Thus, for instance, at Rossbach 5,000 Prussian cavalry under Soubise, which numbered 64,000, and took from them 72 guns, 22 stand of colors, besides killing some 7,000 of them. At Jena and Auerstadt, fifty years afterwards, over-centralization of command and a slavish adherence to the letter and not to the spirit of Frederick's regulations led to about the most disastrous defeat in history; and little more than sixty years after that again, decentralization of authority and the combined action of the artillery and infantry enabled 69,000 Germans* to attack, defeat, and take prisoners an army of but little short of 100,000 French at Sedan.

When the breech-loader was first introduced, it was universally maintained by the adherents of the new arm that its rapidity of fire would confer an immense superiority on the defensive. Few of the principal soldiers in Germany adopted the view, for they maintained that, though it might and would alter the tactics of the infantry, yet that the principle of the superiority of the offensive over the defensive was based on the nature of the man himself, and not on the technical perfection of the weapon he carried. The French took diametrically the opposite view. Their idea of the tacti-

*This refers, of course, to the troops actually engaged in the attack. According to Borbstaedt, the German army at Sedan numbered 200,000 men, of whom 121,000 were engaged.—A. L. W.

cal employment of the new arm was to entrench themselves up to their ears, pour in a terrible fire from their secure position on the assailants, and then dash at them with the bayonet. It is a most fascinating theory on paper, and still keeps a firm hold on our own tactical notions, but it is based on a misconception of human nature, and ignores also the fact that the infantry are not the only arm to be considered on the battle-field. At any rate, the two systems were practically tested on the battle-fields of 1870, and with the same invariable results in favor of the former.

Wherever the artillery prepared the way adequately, the infantry broke through without much trouble; wherever the gunners failed in their duty, the attack was beaten back; the essential point being, it will be noted, the preparation by the artillery. Now it is just this point that I have always found it hardest to get infantry officers to appreciate. To them a battle merely implies a scrimmage between two infantries, and if the other arms are there at all, it is either for the purpose of making a noise or fighting an independent duel on their own account, and this view is not only confined to the junior officers at company trainings, but is equally shared by the general officers and colonels who read and discuss United Service lectures both in India and at home. Their favorite line of argument is about this: If two individuals armed with rifles of equal power are placed, say 700 yards apart, and one of them is comfortably sheltered in a nice little hole, whilst the other has to advance against him right across the open, the odds are about twenty to one on the man in the pit; and, therefore, if 100 or 1,000 men are placed under the same relative conditions, the betting is equally in favor of the ones under cover. Certainly if infantry alone made up the combined whole of a battle, this reasoning would be perfectly correct; but, unfortunately for them, there is another factor to be reckoned with—viz., the guns. These latter stand far away, back out of reach of the rifle-fire of the defenders, and fill the air over their heads with such a tempest of shrieking splinters and bullets that by degrees the nerves of the former give way, and they can no longer take accurate shots at the advancing foe. There seems no limit to the degree of demoralization which may be brought about by a sufficiently concentrated rain of shell fire,

for human nerves can only stand a certain limited number of hours of intense strain, the limit depending on the men themselves and the quality of their discipline; and it is quite conceivable, and it has indeed occurred, that the artillery preparation has so completely broken down the pluck of the defenders that the attack has succeeded with hardly appreciable loss—as, for instance, at the Bois de la Garenne at Sedan. Yes, but the defenders themselves have guns, it is urged, and they will not be altogether inactive spectators whilst this is going on. This just misses the point of the whole thing, for by the time the preparation of the attack is commenced the fire of the defender's guns will have already been silenced; for otherwise—i. e., if they had silenced those of the assailant—they would themselves proceed to prepare the way for their own infantry, and the rôles would have changed hands; otherwise the action would have come to a standstill, and neither side could claim a victory. It might appear from this that the form adopted by either army from the outset mattered very little at all, and it would be so were it not for the fact that the artillery of that side which determines to attack starts with an immense advantage over its adversary—viz., that he knows when and where he means to attack, and can bring all his guns to bear on the chosen point, and thus attain a preponderance from the very outset. The defender, on the other hand, must either distribute his batteries in what he judges to be the most favorable or most likely positions, in which case he runs the risk of finding that the enemy takes a different view of the matter, and he has to change position under fire, or, he must keep back his batteries in reserve, and bring them up when the plan of the assailant is fully developed; in both cases having to come into action under fire—an operation dangerous enough even when only percussion shells were employed in 1870, and ten times more so in these days of melinite bursters and shrapnell.

If the English view of the superiority of the defensive form, as expressed by our Umpire Regulations, is correct,—viz., that to force a position by frontal attack, and all battle-field attacks are locally frontal ones, it is necessary to bring a numerically superior force of from two to three fold the enemy, varying with the passive strength of the position

itself,—it would follow that the German troops, who carried such positions with only a bare superiority, were, in spite of their inferior weapon, some four or five times as good, man for man, as their opponents. But it is submitted that the evidence as to their actual fighting powers hardly bears out that view. Wherever French and Prussian or German infantry met under conditions which precluded the use of artillery on either side, such as in wood-fighting, of which there was a great deal, the equality of the two was pretty even, though wood-fighting robbed the French of the advantage their superior rifle gave them when they met in the open; it required a very decided numerical superiority on the German side to make any headway at all, unless, as before stated, the gunners had done their work first. Undoubtedly the German gun was superior to the French one, both in itself and by the better training of the men who worked it. Still, by itself this superiority was not enough to account for their invariable success. The tactical handling of the artillery, as a whole, has to be considered; and it appears to me, after carefully going through the different battles, that if the conditions had been reversed, and the Germans compelled to defend whilst the French attacked, the former could have done no better or different than the latter. The French artillery were as fully alive to the advantage of massing their guns as the Germans; and if they were less successful in the execution of their ideas, a little reflection will show that the uncertainty which is the necessary consequence of the defensive was the chief cause of their failure.

The successful formation of masses of guns is primarily dependent on their mobility, and at the outset of the campaign the French artillery was probably superior to the German, for all their guns were horsed in time of peace, whereas the latter kept up only four guns per battery, the remaining two being dependent on the country horses brought up on mobilization, and which were not, and could not be, in very high-class condition for fast work. Certainly the French commissariat arrangements were so bad that it is not likely that they preserved this initial advantage for long, but we have the testimony of their enemies to prove that their capacity for maneuvering excited the warmest admiration, and in

all discussions as to the next war it is the French artillery that the Germans primarily fear. The study of combined tactics is so little prosecuted in our service that few officers realize the position of the artilleryman on the defensive, but a more complicated problem hardly exists, for at every turn he is thrown in contact with the conflicting interests of the other arms and the character of the ground itself. And, from the nature of the case, it is impossible that it should be otherwise, for though in the attack the artillery may be boldly sent in advance with the conviction that it can defend its own front for a considerable time, and if forced to retire can do so without particular risk, the defender, having to hold his position against all comers, must from the first occupy it in strength with infantry; otherwise the gunners, if forced to retire, would leave a dangerous gap in the continuity of their defences, which it might be impossible to fill up in time.

The advantages of the attack increase rapidly with the number of men engaged on each side. Where only two divisions fight independently, both sides have ample freedom of movement; but when half a dozen corps are working together, they hamper each other's development very considerably. Still, even with smaller numbers, and with reference only to the infantry, the attack still possesses an inherent superiority over the defence, assuming always that the former make their advance with a sufficient depth, or following number of lines. This arises from a species of natural selection which takes place in the advance. Of course the bullets are perfectly impartial choosers of the slain, but figures show that they fortunately do not select a very high percentage of the men, and if reinforcements were only required to fill the gaps they produce, probably a strength of 75 per cent of the first line would be more than adequate for all purposes, seeing that only once in modern history has this proportion of loss been exceeded in a single battalion, and that, too, in a whole day's fighting. But experience has shown that at least ten men to the yard run of front are required to carry a position by assault, and since at the outside not more than three men can conceivably use their weapons with effect in this space, the balance is necessary to supply the places of the "skulkers," who, as a reference to the pages

of a "Midsummer-Night's Dream" will show, avail themselves of their opportunities most liberally. Hence the men who actually deliver the assault are a clear case of the survival of the fittest, men who are there because they want to be there, and have been brave enough to resist all temptations to stay behind. But no such sorting-out process is conceivable in the defence, more especially where the defenders are entrenched. There a line of troops, say at the rate of two men to the yard, have been from the first, and the weaker vessels have had no opportunity to get away. If we assume an equal degree of pluck on both sides to commence with, then at least an equal proportion of the men on the defensive will have been as anxious to get away as were anxious to stay behind—indeed, a larger proportion; for the advantage the latter possess of leaving their dead and wounded behind them must not be forgotten, and therefore some four-fifths of the defenders may be expected to face the advancing foe only up to that point when the fear of the bayonet in front balances the danger of the fire-swept ground behind. This is assuming the defender's line to be taken up some little way down the slope of the position, as will generally be the case, both in order to secure a better field of fire, and also to render it less easy for the men to get away than it would be if they held the extreme crest of a range. It seems impossible to do anything to avoid this defect of the defence by reinforcements, for these can rarely be near enough at hand, being necessarily distributed equally along the whole front, whilst the assailant has massed all his together for an effort against one point, and also because too frequent reinforcements would lead to hopeless overcrowding in the trenches themselves.

To my mind, these German statistics finally settle the question of attack or defence in favor of the former; for it must not be lost sight of that the German conduct of these battles was only sound in its general principles, while the detail execution fell very much short of the ideal. Take all the battles in succession, and eliminate the gross blunders and losses they caused, such as the attempt to storm the heights above Worth held by the French army of 42,000 odd men with 4½ battalions; the direct assault on the Spicherent position without proper artillery preparation by some 10

battalions along a front of nearly 7,000 yards; the attack of the Guards at St. Privat,—all gross mistakes for which no palliation can be found,—and it will be seen that the Germans might easily have won their victories with even fewer men.

This much, however, is certain—viz., that the events of the war fixed the idea of the offensive more firmly than ever in the minds of those who took victorious part in it, and it is only amongst the Austrians and French who were defeated that the opposite view obtained; and even in those armies it is rapidly dying out. We only adhere to it in England because we still imagine that to carry out the attack necessarily requires a numerical superiority. This is true, no doubt, as regards the actual tactical execution, but it is not true, even theoretically, as regards the whole army. Hitherto it was only possible to advance theoretical reasons for our faith, but now there are these practical examples worked out on the battle-field to refer to, and no shadow of a proof can be advanced in favor of the opposite view. If only this belief in the defensive could be driven out of our tactical books and schools, it would be equivalent to doubling the numerical strength of the army, and it would not add two pence to the estimates. Here is an opportunity for the reformer.

THE ORIGIN OF EXTENDED-ORDER FIGHTING.

The heading of this article is really a misnomer, for the origin of extended-order fighting really is lost in the mists of antiquity. It is certainly older than pre-glacial man, for the baboons* who opposed a British light infantry regiment in the first Bhootan expedition are said to have shown themselves skillful individual fighters; but it is no part of my intention to go in for antiquarian research, but only to trace the development of the idea since fire-arms became sufficiently perfected to render their power the decisive element on the field of battle.

For all practical purposes the first Silesian War may be taken as the starting-point of modern tactical evolution, and

*The incident of the combat between a British force and a tribe of apes will be found, to the best of my recollection, in Darwin's "Descent of Man."

the subsequent Seven Years' War is the basis of all line tactics proper, the question of extended versus close order only commencing in Europe with the French Revolution, broadly speaking, in 1792. The object of this letter is to show how all the questions connected with these two different ideas were threshed out in the military literature of the day; and how, though the advocates of individual or extended order had the best of it on paper, the close-order school triumphed on the battle-field; and how, seeing the line of development fire-arms have taken, and the results obtained by them on the battle-field, it seems probable that the latter will do so again; and further, how we as a nation have missed leading the way of tactical reform, owing primarily to our want of self-reliance in military matters; for it was purely our ignorance of tactical history which led to the revolution in our ideas in 1871. Had we followed the course of events on both sides since Waterloo, it would have been apparent to all that no nation stood further to the front and was more ready to make the most of the power of the new weapons than we were at the time.

I have recently come across a copy of a small work on tactics written by a very remarkable man, whom the Germans call the father of modern tactics, in 1805. This man was Heinrich Dietrich von Bülow. Originally trained in one of the Prussian war schools, after a few years in the cavalry he left the country and visited America, England, Belgium, and France, noting everywhere all that he saw of tactical importance. His training in the lower ranks of the Prussian army had made him thoroughly alive to all its deficiencies in matters of detail, the result of pure pedantry, but had failed to afford him any insight into the higher principles on which the line formations actually rested; and to the last he appears never to have been able to take any higher view of the matter than that of a subaltern officer. In America he had become acquainted with the fate that our British line had too often encountered at the hands of the colonists and the Red Indians; and in France he had seen all that the volunteers of the Meuse army could show in the way of extended-order fighting; but of his own army he appears, as is very often the case, to have learnt only its

faults and none of its triumphs. On his return to his country he wandered about to all the little German courts, trying to find a position as tactical instructor, and putting in his spare time by writing. But in spite of the undeniable genius and brilliancy of many of his ideas, his extraordinary onesidedness and his unfortunate addiction to sarcasm stood in his way. He ended by mortally offending everyone, and was at last taken up on the charge of treasonable writing; and though not convicted, he was considered too insane to be at large and was kept in confinement at Colberg, whence—how, has never been cleared up—he passed into the hands of the Russians, and is believed to have died from the effect of the cruelty and neglect of his custodians. My reason for referring to him is that his tactical papers contain every one of the ideas to be found in the writings of the modern extended-order school, such as the "Tactical Retrospect" and Boguslawski; and so close is the resemblance that one is tempted to believe that these two authors copied from him direct, without acknowledgment.

That pedantry had reached its extremest limits in the regimental drill of the Prussian infantry there is not, and never has been, any question. When we find the most revered* writer of the drill-ground school gravely discussing whether the cadence of the quick march should be 76 or 75 to the minute, and eventually deciding that, on the whole, after ripe consideration, he gave the preference to the latter, it is easy to imagine what his followers must have been like; and one can easily understand that with such perverted ideas, Von Bülow's description of the advance of a Prussian line in action may not be far off the truth. This is what he says about it:

"Let us take the simplest example, the advance of a line straight to its front. It is necessary, first of all, to place a line of points, and carefully dress the men on them; all this takes some time; then the word is given, and the line steps off 76 to the minute, rigid and silent, every man afraid of the stick, and praying that they may not encounter a ploughed field, a

*I have since learned that "Saldern," the writer to whom I referred, and who was the founder of our own drill-book, was, as a fact, about the best practical infantry leader that Frederick the Great ever possessed; having seen the ground at Torgau over which he maneuvered his brigade, I feel it due to apologize to his memory, though I cannot realize his mental attitude.

mole-heap, or half-a-dozen heavy flintstones. These sorts of things ought not to be on a battle-field; they upset the order too much; nevertheless they sometimes are there, and then it is very inconvenient. Suppose, for instance, a six-foot ditch is met with: what is to be done? A peasant or poacher would jump across it, but with troops it is not to be thought of; their trowsers are too tight, and the soldier too stiff and too weary.... But I have said nothing of the two boys and the two old men (the guides and the sergeants) who are to give the time to the whole battalion, which has to look to them to keep step, although every rational man prefers to look in the direction in which he is going—i. e., to his front. One sees that such tactics are not based on anatomy, but what then? Nature must bow to art, and the man must be taught to squint. Really I find prose almost too feeble to describe what would happen against my line of smart handy skirmishers, each one lying flat on the ground, waiting till the enemy are within 30 yards before they fire; the result would be absolute annihilation."

Possibly it might be; but, unfortunately for his argument, the line of skirmishers has never yet been found that would do as he would have them. A little further on he describes another method of advance as in those days a favorite fad of the drill-masters—viz., the oblique advance, not by the diagonal march, as one would suppose, but by a series of diagonal steps, the body being kept square to the front. But he gives himself away rather by admitting that in real work these errors correct themselves; and as, for instance, at Torgau, where the grape from 200 guns in line proved more than flesh and blood could stand, the line broke through to the front and threw themselves forward as fast as they could run, throwing themselves down to get their wind and going on again. His own ideal is, as he says, the swarm of the Iroquois Indians, and actually what both French and Germans have since practised—a dense line of skirmishers, one man to the yard, backed by company columns. He would have the men trained as sportsmen rather than as soldiers, each man to take individual advantage of cover and to "stalk" his enemy, and never to fire till within 30 yards; whereas the line was supposed to open fire at 300.

As regards the confusion which his style of fighting would entail, he simply says, "We must learn to organize disorder;" "The battles of the future will be decided by skirmishing fire," two sentences familiar enough to readers of modern tactical literature.

Perhaps the most singular instance of his foresight was his exact prophecy of what happened at Jena. There the Prussians did advance in faultlessly dressed echelons, and were met by the French Tirailleurs, who treated them as he had foretold; but what he and his followers in modern times have forgotten to notice was that, thanks to the faulty leading of the superior commanders, the line was always fighting against double and even fourfold odds. As is well known, Jena was the death-knell of the Prussian line; the reaction against the foolish pedantry which had proved its ruin swept it all away—its good points as well as its evil ones—and many would have gone the whole way advocated by Von Bülow. Fortunately, a few first-rate men preserved their heads sufficiently to realize the weak points in Von Bülow's structure—viz., that battles are not fought by a single line alone, but by the successive employment of the reserves, and that infantry is not the only arm on the battlefield. Still the principle of the small column and skirmishers asserted itself over that of the line, and has maintained itself to this day; though the long peace and the almost universal neglect of military study everywhere except in Berlin has caused its subsequent history to be forgotten. In brief, this was as follows: When the skirmishers and small columns met one another, it was speedily seen that in this way no decision whatever could be arrived at, a fact of which Frederick the Great and the line tacticians had been perfectly well aware; the two lines of skirmishers engaged along the whole front, and as the small columns were called up, the fire line fluctuated backwards and forwards; it became necessary to settle the matter one way or another, and where the others tried it in a haphazard way, Napoleon systematized the thing. First he drove in the skirmishers, if necessary, by a charge of cavalry, and established his line of guns at case-shot ranges; then it was discovered pretty simultaneously everywhere that Von Bülow's theory of skir-

mishers versus artillery was not quite what he had expected it to be. But, the old absolute discipline of the line having been forgotten, there remained nothing to oppose to the guns but columns, and it seems never to have occurred to Continental leaders to let those columns lie down, as our own Duke used to make them do. A massed charge of cavalry, if not interfered with by the opposing horse, then generally decided the matter, and the conquered position was occupied by columns with sloped arms. Sometimes the enemy's artillery could not be so easily dealt with, and then it became necessary to advance against them; and since, as recently described in a letter on the Napoleonic conscription, the quality of the French infantry had deteriorated so far that they could no longer be induced to advance in any other way, heavy columns had again to be employed—a proceeding which was promptly copied, like everything else the French did, by the other side. Hence on the Continent, at the close of the great war, both line and skirmishers were everywhere somewhat discredited, and the battalion column reigned supreme for battle employment.

No one thought of enquiring how the French system had answered against the British line, or, as time went on, how our line had fared against other opponents. It was the "line" borrowed from the Prussians, and therefore a relic of the past, with which the enlightened present could have nothing to do. Those, however, who did not think of it, remembering the reputation the British infantry had everywhere made for itself, frankly admitted that though it might suit us very well, their troops had not got the stuff in them to imitate us. Then came the introduction of the breech-loader simultaneously with the adoption of short service; and it seemed for the moment that the supporters of Von Bülow would have it all their own way, for the power to load in any position filled up what had hitherto been the weakest point of their system. Instinctively, therefore, the Prussians adopted his views in presence of the enemy, and against the muzzle-loader they answered well enough. But when they themselves had to face an enemy not only armed with as good a weapon, but with a very much better one, which held them under fire for a thousand yards before they could return a shot, things

changed altogether, for the troops suffered most severely, and arrived at their first shooting position in such disorder that to all intents and purposes they were out of hand, and fought simply by individual instinct. What the resulting confusion was like, the "Midsummer-Night's Dream" and similar papers will give an idea; and it was universally felt that somehow or other this state of things must be put a stop to.

There is always a difficulty in following the course of an idea at Berlin, for the highest-placed commanders, who make the regulations, do not, as a rule, write pamphlets, and there seems, too, both from the few that have appeared, and still more from the study of their regulations, to be always something concealed behind what they do write, a something which can only be understood by those who have been through the mill, and possess the requisite key to understand the esoteric meaning of the works. One can only judge by what was done or allowed to go on, on parades and inspections; but, from what I heard and saw as far back as 1874, the principle of the line received very much more attention than that of the column or extended order.

Their writers had begun to turn their attention to the history of their old wars, and had discovered wherein the real spirit of the old line lay. This, according to Frederick himself, was not the bayonet charge in line, as so often imagined, but rather the development, opposite to the point of the enemy's position selected, of an overwhelming superiority of fire; and this superiority once obtained, the further advance with the bayonet was merely to clear the enemy out, and what order it was made in was perfectly immaterial. Volleys from a three-deep line was the best method for establishing this superiority, and since, too, the only fire to be faced during the advance was that of artillery, and of a few skirmishers who were easily held in check. Line was in all respects the best adapted to his purpose, the attempt to advance in column and then deploy into line being an obvious waste of time. Now, this is exactly what we want to do at the present time, only the increased range of modern arms compels us to move everything back a stage further, and the fire of the magazine rifle at short ranges has

taken the place of the bayonet charge of former times.

Dealing with the purely infantry attack, a necessity which may arise where the two artilleries are too well matched for either to obtain a decisive superiority over the other, it is obviously necessary to bring one's own infantry up to effective range as rapidly and in as good order as possible. It will therefore be necessary to advance without halting to fire, in order to reduce the time of exposure; and to keep the men in hand they will have to be in a close-order formation of some sort, preferably in line, though by "line" we no longer mean a long unbroken line of brigade, but a line of companies, separated by greater or smaller intervals, according to circumstances, and whether in single rank or double rank is a matter which will depend on the quality of the men themselves. That such a line can advance without firing to within effective range, say 700 yards, I believe to have been sufficiently proved by what happened in 1870, where, in spite of the absence of the covering screen of smoke, and in spite, too, sometimes, of the want of artillery preparation, the Germans invariably got in even closer, no matter even if the numerical superiority was as high as four to one; and the instances of the 38th Brigade recently quoted and of St. Privat show to my mind conclusively that they suffered no worse when in line than when in any other formation. The fact that these advances succeeded even against great numerical superiority disposes of any objection founded on the more rapid fire of modern arms. Even admitting that the present rifles fire twice as fast, and that this rate of fire can be maintained, which is far in excess of the truth, we can afford to divide the 20,000 French at Bruville by 2, and the fact will still remain that the Prussian infantry did face on that occasion a fire as heavy as 10,000 men with modern rifles could pour out, and reached a limit well within effective range without returning a shot. But if one line could get there, another could have followed it equally well, and a third and fourth if necessary, always supposing that the superior leading had massed the requisite number of troops opposite to the point of attack, and hence the eventual accumulation of a sufficient superiority becomes principally a matter of time. That this superiority will be decisive at the

first range is unlikely, but it will be sufficient under the impulse of fresh troops from the rear to get in a stage closer, and at each stage the same result repeats itself, till within 400 to 300 yards the resistance of the enemy will be utterly broken, and the subsequent advance will be merely to occupy a position tenanted only by the dead and dying.

Of course, in proportion as the gunners have been able to do their share of the work, the difficulty of the attack decreases, and it will be the business of the leader to adapt his formations to the conditions of the moment; and if the enemy can be turned out by an ordinary skirmishing line, there is no reason why he should not be.

Reviewing the matter in all its bearings, it appears to me that the difficulties and drawbacks attending Von Bülow's method are even greater now than when he first started them. Of course, it is as hopeless to expect in a big battle a decision from a line of skirmishers now as it was then, but the main difficulty now of getting them anywhere near the enemy in open order is increased. Troops, unless disciplined like iron, will return fire when in extended order, the moment they begin to feel it. Formerly, when it was only a matter of fifty yards one way or the other, it did not much signify if they did; now, if they began blazing at each other at 1,800 or 2,000 yards, the fight would be indefinitely prolonged, and the losses proportionately greater. That they will do so, what happened pretty generally in 1870, though I believe not in the 38th Brigade, shows pretty conclusively. In spite of a fairly high order of discipline, individuals began firing at double the effective range of their rifles, even though they knew they could not hope to hit; then how much harder will it be to stop them when they know that the bullets will at least go as far as those they are receiving; and to stop this, nothing but effective discipline in close order under the eye of an officer has ever been known to be of any avail.

The view taken of the matter in Berlin generally tallies with this, though they have adopted in their drill every one almost of Von Bülow's ideas, such as developing the individuality of the man to the utmost. Doing away with all superfluous relics of the past, they have never ceased to exact the most rigid steadiness when in close order; but they assert,

and I believe this to be the key to their whole system, that tactics are only relatively good and bad—a formation admirably adapted for to-day may prove deliberate manslaughter to-morrow; and that it is not for the troops to judge when, where, and in what formation to attack. For instance, if the need suddenly arises for troops to move against the enemy across a perfectly fire-swept space, no other line being available, you don't want all the men to feel that this time it is all up—we are all "gone coons"—for it does not at all necessarily follow that they are, and the leader is the best judge of that.

Now, in that way I believe we were very much better off in 1870 than now; as the army then stood, with its tradition of absolute unquestioning obedience, a good leader could have done what he pleased with them. It is true that many of the line regiments were a little awkward at outpost duty and skirmishing proper, but there was no inherent reason in the nature of things why they should not have been brought up to the standard of our best rifle and light infantry regiments, in which absolute discipline was of just as high an order. The fault lay in exaggerating the dangers to be faced, and teaching everybody that it was a duty he owed to the state no less than to himself to avoid every possible chance of injuring his own skin. Instead of repeating like parrots the terrible stories of bloodshed we learnt from our war correspondents, who wrote primarily for the taste of the British public, we might at least have pointed out that even the worst of them in their exaggerated form was no worse than many we had successfully faced before, and that common sense showed that a bullet from a breech-loader was no more deadly than from a muzzle-loader, the only question being the quantity of bullets to be faced in a given time, and that the duration of that time depended primarily on the use we made of our own weapons.

We had, however, come to believe in the bayonet charge as the essential feature of line tactics, and not in its fire power, and this alone appears to me to have prevented our progress. Otherwise all that would have been required would have been to move back our first fire position a little further with each successive improvement in the range of

our weapon. Fire superiority alone decides, has decided, and more than ever will decide; and the power of accumulating this superiority by right belongs to the offensive, who brings up his masses out of sight of the enemy, and then sends them in against the defender, who by the nature of things is compelled to be equally strong—i. e., equally weak—at all parts of his line, and common sense and experience alike prove that the principle of close-order “line” will enable that accumulation of rifles to be best carried out.

THE LEGEND OF ST. PRIVAT LE MONTAGNE.

Possibly some of my readers may be inclined to consider anything relating to an event already more than twenty years old as ancient history, but I can assure them that, as regards the question of the evolution of contemporary British infantry tactics, the correct history of what happened on the “blood-stained glacis of St. Privat on the 18th August, 1870,” is still one of the most pressing and important questions of the day; for an amount of legend, rivalling in quantity even that of the Waterloo campaign, has already accreted round it in English tactical schools, which is likely, if the tendency is not checked soon, to have the most detrimental effect possible on our fighting formations.

The conventional idea of what occurred on this occasion was primarily derived from a pamphlet written shortly after the war by Lieutenant Field Marshal the Duke of Würtemberg, an Austrian officer who followed the German armies in France, but who was not personally an eye-witness of this particular event. His account of what took place is substantially as follows:

“About five o’clock in the afternoon, the commander of the guard considered the enemy to be sufficiently shaken for him to risk an assault across the open and gently ascending ground. The 4th Brigade (Von Kessel) first moved forward from Habonville in the direction of St. Privat in ‘line of columns’ in two lines, with skirmishers thrown out in front; and a quarter of an hour later the advance of the 1st Division (Von Pape) commenced in the same formation. The front of attack included little more than 2,000 paces, so that there

were about ten men to the pace. This, however, was the closest formation of attack employed by the Prussians in this campaign. The effect of the enemy's fire, even at a distance of more than 1,500 paces, was so murderous that, according to the accounts received, nearly 6,000 men fell in ten minutes, and the advance had to be immediately discontinued."

The fact that the commander of the Guard Corps was himself Prince August of Würtemberg has probably led many people, who only study these things superficially, to conclude that the author of the pamphlet and the commander of the Guard were one and the same person, and hence to attach undue weight to this pamphlet. But only the habit of exaggeration which seems innate in a certain class of English military writers can account for the extraordinary way in which this simple narrative, which does not vary very much from the truth, except as regards losses, has been distorted and made to serve as a basis for all sorts of ridiculous schemes of attack. For the term "line of columns" "heavy" or "dense" or "massive" columns have been substituted, and these again have been interpreted to mean battalion, and even regimental, columns. Whilst for the modest "nearly" 6,000 men who fell in ten minutes, 7,000, and even 8,000, have been interpolated.

Let us see what actually did happen according to the regimental histories of the troops actually engaged, and first let us take the account of the part played in the battle by the first "Garde Regiment zu Fusz." The original would occupy several columns, so I have condensed it, even to the sacrifice of style. According to this authority:

"Between 3:30 p. m. and 4 p. m. the brigade to which we belonged (Von Kessel's) stood about 500 yards south of St. Marie aux Chênes (a little village on the great chausée which leads to St. Privat, and distant from the latter place about 2,000 yards in a westerly direction), fronting north, the two regiments (which constituted the brigade) side by side with the fusilier battalions of each as first 'treffen' (or line), their flank companies in advance; the second battalions formed the second 'treffen' in half-battalion columns (500 men) at deploying intervals, and the remaining two battalions, the first of each regiment, stood in the same formation as third

'treffen.' For nearly two hours we lay, suffering constant losses from chassepot bullets and from shrapnel fire from the French batteries on our right flank about St. Privat, and the incessant strain, watching for the little white clouds of smoke which puffed out in the sky above us, and then the few seconds of intense anxiety to know where the bullets thus released would strike, did not fail to have its effect. [I may mention here that the French shrapnel was of an extremely inferior nature, and moreover their artillery was so thoroughly held in check by that of the Prussians that they had but little attention to give the infantry, which, moreover, was so far off as to be beyond the supposed limit of shrapnel fire in those days.]

"At last, about 5:30, came the long-wished-for order to advance and storm the village of St. Privat. The task set us was about as follows: at the foot of a long glacis-like slope, which rose gently for some 3,000 paces, and without a particle of cover to screen our movement, to change front half-right, and then move to the left across the chausée, here enclosed by two deep side ditches, and then to wheel into line again and advance to the assault.

"The order was executed in the following manner: The two fusilier battalions, having moved northwards across the chausée, wheeled to the right and advanced, that of the third 'Garde Regiment zu Fusz' next to the road, ours next on its left. The second battalions followed across the road and also wheeled to the right, joining the fighting line then on the left of their respective fusilier battalions. The battalions of the third 'treffen' followed in a similar manner; but as soon as they crossed the road, the necessity of supporting at once the troops in the fighting line caused them to be broken up by companies and sent to join the fighting line wherever their aid was most required."

Von Kessel, the Brigadier, describes the movement in the following manner:

"Shortly after 5:30, the divisional commander, Von Pape, rode up to me and gave me the order to advance and storm the village, which he pointed out to our right flank. I called up the regimental commanders and repeated it verbally as I had received it, and then added that immediately

after sounding the advance, I should order a change of front, quarter-right on the right battalion. On completion of this, the skirmishers of the first 'treffen' were to be thrown out, and then, as soon as the chausée had been crossed, I should order a second, quarter-right, change of front.

"The first wheel was executed in good order, but, immediately after passing the chausée, the columns came under so heavy a fire, both of artillery and chassepôts, that the advance was seriously impeded. About 100 paces in front of St. Privat dense lines of French skirmishers lay skillfully concealed, and their fire, which began by bugle sound, cost us heavy losses. I saw at once that all the columns, irrespective of distances, caught it equally. The bullets, still effective after several ricochets, made all calculation, based on the principle of 'distances,' illusory. The French shoot without aiming, and leave it to the flat trajectory of the bullet to find its own billet. The nature of the ground compelled us to run forward by groups, and then to throw ourselves down to take breath. With severe effort, and leaving men behind us at every step, we managed to reach a slight undulation some 600 yards in front of the village, and our resolute advance had the effect of making the French skirmishers abandon their position and take shelter behind the walls of the village, and their fire from this new position was fortunately less effective.

"I had sent the fusilier battalions which first crossed the road direct against the village, and had allowed the following ones to continue the movement to the northward (i. e., left), because I hoped they would find better cover further on. Also I knew I could rely on my regimental commanders to join in as circumstances required. For myself, I remained near the chausée, as I felt that my personal presence was most required there, for the losses in officers was already great. From that moment I did nothing but drive the columns forward so as to get to closer quarters from which our shorter-range weapons might be used with effect. The noise of the bursting shells and the heavy infantry fire rendered it almost impossible to make oneself heard; both skirmishers and columns had to throw themselves down to get breath.

I must confess that they always rose to my call and resumed the advance.

"When a large body of troops advances over a plain, it is particularly unfortunate that every man can see the losses that are incurred, and the sight of them increases the terror enormously. Whoever denies that such scenes have an effect on the young soldier, has never personally been through such an ordeal. Whenever for a moment we offered a favorable target, we heard a bugle-call in the French lines, and the next moment came such a hail of lead that all were compelled to throw themselves on their faces. The losses in the fighting line caused fresh troops to be sent up, the columns rapidly diminished, gaps began to appear in the front, and the loss of officers became very sensible. Individuals went forward, mostly stooping low, and with averted faces, with hands raised in front of them, as men instinctively do in a hailstorm, their features distorted by terror. The terrible moral effect could not remain unrecognized. I ordered all buglers and drummers to sound and beat the 'advance,' and for myself kept reiterating the command, 'Forward!'

"By this time at least fifty officers in the brigade must have fallen. One must have commanded in such a crisis to know what it means. It struck me as I looked round that if things went on at this rate for long, the whole brigade would be down before we reached St. Privat.

"About this time, Colonel von Röder (3d Guard Regiment) came up to me and described the position of the left wing,—half a battalion of his regiment was moving on Roncourt (a village about 1,000 yards north of St. Privat), and a few of the skirmishers of his first battalion had also gone off in the same direction. The columns of the center had directed themselves on a small height, which broke the level of the ground a little to our side of a line joining Roncourt and St. Privat, and were suffering less. I fully agreed to what he said, all the more as I could do nothing to alter things, and gave him, as he was on foot, his horse having been killed, the horse of my adjutant, Lieutenant von Kessel, who had just been knocked clean out of his saddle by the blow of a chassepot bullet in the right shoulder. My second galloper, whom I had sent to ride down the front and order

the drums to beat the 'advance,' received a bullet through his hand and did not return to me. Of my two orderlies, both had lost their horses, and one was mortally wounded. The bullets now came in harder and faster than ever, and my horse had become through fear almost unmanageable.

"From the low meadow ground where I had spoken to Colonel von Röder, I rode towards the chausée, and found everywhere the ranks much thinned. For all eventualities I wished to have a formed body of men in hand, and gave the necessary orders.

"So, by the alternate advance of the columns, a position was at length reached from which we could reply advantageously to the fire of the French.

"Roncourt was easily carried, and now, about 6:45, we partially enclosed the village of St. Privat from the northwest and west, and thus had attained a position from which it was possible to advance to the storm of the place.

"I reported my position to the general officer commanding, and added that, as matters stood, we were too weak to advance further, but that, under cover of our fire, columns might still be brought up in rear of the center.

"My idea was that I had certainly lost far the larger half of my officers, and at least half of my men, without having as yet inflicted any appreciable loss on the enemy. Still, as I watched, I could plainly see that our opponent was no longer unshaken; detachments began to break back and were driven to the front again.

"In the village itself I saw columns advancing, but a pillar of smoke rose up from one of the farms by the road and stood out black against the sky, which was already touched with the sunset colors. The fire at least was a help to us, and its appearance was greeted by our men with loud cheers.

"To the northeast of the village I saw a regiment of cavalry on gray horses advancing, apparently with the intention of riding down our fighting line. Infantry which on open ground has already experienced considerable loss never quite likes it when it sees cavalry advancing to the charge. There is a considerable feeling of uncertainty as to how the matter will turn out. Just at this moment my horse was shot under me. Clearing myself from his body, I took my revolver out

of the holsters, and, walking up to the skirmishers, told them what to expect, and gave the order to reserve their fire till the enemy were within fifty paces, and if that did not stop them, to let themselves be ridden over.

"The men of the first 'Garde Regiment zu Fusz' were noticeably cool and collected, adjusted their sights, and my adjutant stayed with them to give them the word of command. In order to give the same orders further down the line, I doubled across a small hollow, but was so blown and fatigued in my long boots, and owing to the great heat, that I was almost speechless when I reached the next body of troops, and here there was no single officer erect to receive my orders, and all my staff had been left behind. The appearance of the cavalry had its effect along the whole line. Some prepared to receive them in rallying squares, others in groups, and in the center the men mostly remained lying down. Fortunately, nothing came of it. The cavalry evidently had no desire to charge home, and presently vanished.

"But now the Saxons began to put in an appearance, and with them the men seemed again inspired with a desire to close."

So far General von Kessel; now let us turn back and trace the fate of the individual battalions:

"The Fusiliers on the right flank of the brigade lay in the line of the heaviest fire—and, as already mentioned, their flank companies had been sent forward as skirmishers in advance.

"Already before crossing the chausée they had come under a heavy chassepot fire. They executed their change of front, quarter-right, satisfactorily, in spite of a couple of shells which burst amongst them, and went forward in the direction of St. Privat.

"Suddenly, on the rising ground above the village, a line of smoke rose clear in the air, and the next moment we were overwhelmed with a storm of projectiles, and the men fell in heaps. General von Kessel gave personally the order to two or three section leaders to extend their men, and in a few moments almost the entire flank companies were dissolved—only Lieutenant von Alvensleben II. kept his men in hand about one hundred yards behind the skirmishers.

Here, as everywhere, the advance was continued by alternate rushes. Though the distance was still far beyond the range of our weapons, the men were allowed to fire. Under the appalling rain of the enemy's projectiles, one seemed so powerless that any means of keeping up the men's spirits was resorted to.

"After a few moments to get breath, a fresh rush was attempted. The only drummer still remaining had both arms torn off by a shell; Lieutenant von Halkewitz was hit in the side, and fell; Lieutenant von Maltzahn was shot through the right foot, and could not go on. The adjutant of the battalion, Lieutenant von Wartensleben, had his horse shot under him, but joined a company, and was himself disabled a few moments afterwards by two bullets. The company again rose and raced forward some fifty paces. Captain Graf von Finckenstein was hit in the foot, and gave over his command to his subaltern. When we got within 600 paces of the village, we saw the French falling back out of their advanced trenches on the village.

"The 2d Battalion came up on our left flank. The losses increased from minute to minute, and the noise of the bursting shells and of the breech-loaders was so deafening that no commands could be heard, and only the whistle asserted its power. The right wing division of Lieutenant von Alvensleben's 'zug' was struck by a shell, and at the same moment the left wing of the same command was simply swept away by a round of a mitrailleur, which struck the ground like a charge of shot. But the advance continued, and after each halt the men again rose up and advanced with determination. About this time the 10th and 11th companies (i. e., the two center companies, which had hitherto occupied the position of our old main body in the attack) were brought up, and with 'drums beating' (which means in 'parade marsch'), the officers in front, the whole went forward together; but again, and at about 400 paces from the village, we were compelled to lie down. At this moment the cry, 'Down! the cavalry is coming!' was heard, and to our left front we saw the gray horses and white cloaks of the horsemen; but, fortunately, the charge did not come off, for on all sides the want of ammunition was beginning to be felt. Four more officers fell;

captain, still mounted, ordered the battalion to lie down and not to advance—and, greatly excited, Count Schulenberg seized Lieutenant von Bonim by the arm and said, ‘We must go on, believe me. We shall lose far fewer by advancing than by being out here’; and between them they got the men to advance to within 200 yards of the village, where they captured a shelter trench which had been deserted by the French, and took cover in it. It was now about 6:30, and the ammunition was about expended. With difficulty, Lieutenant von Bonim crawled round and collected cartridges from the killed and wounded. Here for more than half an hour lay the remains of the battalion—waiting with longing for reinforcements, but certainly not ‘morally’ shaken. A Saxon shell burst short in amongst them and killed two men, besides wounding several, and seven more officers fell. Out of the village they could hear the French bugles sounding what they took to be the ‘advance’ (it is the same in our own and both the French and German armies), and every moment they expected a counter-attack.”

Here we will leave the Fusiliers, and only add that the brave and fortunate young subaltern Lieutenant von Bonim eventually led them through the actual assault of the village and out of action. Poor Von Schulenberg, whose words quoted above show what a soldier’s insight into things he possessed, was left for dead in the trench, but I believe eventually recovered, and the total losses of the battalion amounted to 18 officers, 93 non-commissioned officers, and 372 men.

Let us take up the history of the 2d Battalion:

“After it had deployed into half-battalions and crossed the chausée, it moved further to the left, and then followed as a left echelon to the Fusiliers, the idea being to get round the flank of the enemy and attack from his weakest side.

“As soon as the front had moved in to the direction of St. Privat, General von Kessel ordered skirmishers to be sent out, and shortly afterwards the colonel ordered the half-battalions to separate into company columns. In this order they gained ground a little way, but still fresh skirmishers were called for by the general. The distance was still too great for our weapons, and a shorter range had to be ob-

tained, and the companies advanced almost without firing a shot. The attention of the men to the officers, the 'appell' (untranslatable in our language, more is the pity), and the fire discipline were not for a moment impaired.

"Lieutenant von Brasn  e and Lieutenant von Woerlich led their 'zugs' forward by alternate rushes of from 100 to 150 paces, and the French steadily fell back before them. About 6:45 the cavalry above referred to appeared, wheeled into line, and advanced at a trot direct for Lieutenant von Brasn  e's 'zug.' The latter ceased firing, cautioned his men to shoot slow and low, and ordered them to wait for his word. At about 300 yards he gave the order for independent fire, and before this fire the cavalry turned tail and bolted.

"Meanwhile the 5th and 6th companies had closed in again on each other and lay in line two deep."

The 7th and 8th companies had much the same experience as the other two; only it is worth calling attention to the fact that, on the right wing, where men of two different corps had become intermingled, confusion set in, and no exertion of the officers could prevent them bolting. Still the intact portion of the companies was saved, and they eventually forced themselves forward and lay down in line with their comrades in the Fusiliers, waiting for the fresh impulse to advance; and here we will leave them till next week.

A great deal of this article has been written between inverted commas, but I should wish it to be understood that it does not profess to be a literal transcript, but is only a *pr  cis* of some thirty pages of the original. I had hoped to quote all the officers' names as they fell, so as the better to show how the gradual dissolution of the force set in; but they fell in such numbers that the names alone would have filled half a column. Next week I hope to continue the article, though not in such detail, for the experiences of all were pretty uniform, and till then I withhold any comments. Only one or two points I should like to particularize here, and that is the very evident difference of opinion that appears to have existed between the regimental officers, those in closest contact with the men and the general officer commanding, as to the use of extended order, for here we find the general calling for skirmishers and the subalterns holding them back.

Those of my readers who remember the *Midsummer-Night's Dream*," reviewed in these columns, will recall a complaint on this head by the writer—a point it will be useful to bear in mind.

I have traced the fortunes of the Fusiliers and 2d Battalion 1st Guard Grenadiers "zu Fusz" in the attack of St. Privat in considerable detail. The experiences of the 3d Battalion—and, indeed, of all the other regiments—were so very similar that I propose only to note a few of the most essential points.

The 1st Battalion of the above-mentioned regiment advanced at first in two half-battalion columns, which, however, soon lost all connection, one column being called on to reinforce the extreme left of the line, the other to fill up a gap in the center of the fight. Both columns appear to have deployed into line from the outset; it is expressly stated to have been done by the right half-battalion, and is implied in the case of the other one; and in this formation they advanced right into the fighting line, and only then deployed their skirmishing sections.

Their arrival gave the impetus for a fresh series of rushes, but their momentum was insufficient to carry the troops on to the final storm, and so they, too, at length lay down to wait the arrival of the Saxons, who, by the way, distinguished themselves by firing into the left rear of their friends. Whilst lying out here in the open, it is expressly stated that several of the companies previously extended managed to rally their men and re-form them in "two-deep line." I mention the two-deep line, because, whenever "line" without this qualification is used in German works previous to 1888, three-deep line is understood.

As for the last rush, or, properly speaking, the actual assault on the village, I will again quote the brigadier's (Von Kessel's) account:

"The last position of the brigade before St. Privat formed from right to left a continuous line. On the right, owing to the heavy losses, there were no supports. On the left there were still some closed columns behind the fighting line. As soon as I had mounted a fresh horse, I

strove hard to rally stragglers who, owing to their officers having fallen, were trying to skulk off. I also endeavored to drive on those who had contented themselves with lying down under cover; it was a heavy task, and only partially successful.

"Our line was now converging round the village, the artillery were pouring shell into it, and as the losses on the French side became heavier, ours diminished in proportion. No order was given for the assault, every one acted spontaneously—a general conviction appeared to seize on all that now or never was the time. They all dashed forward together, and after a sharp struggle at the walls, in which many fell, the streets were filled with our men, and a succession of desperate house-to-house fights ensued, in which the most indiscriminate firing took place; in many places our troops firing into one another, whilst during the first few moments a few of our own shells added to the confusion.

"At the same time the French artillery also poured shell into us; the village, too, was on fire in several places."

In the attempt to debouch out of the village, which was ultimately successful, and in the terrible artillery duel which followed, when the Guard artillery took up its final position just in front of the overcrowded infantry, and which lasted for possibly another hour, the losses were very heavy, though of course, in the growing darkness and almost hopeless confusion, they did not attract the attention the earlier ones did. But, in considering the actual losses in the attack with reference to the question of formations, these must not be left out of account.

I may note here in passing, as this "spontaneous" movement of the whole is very characteristic, that the statement quoted above is confirmed by two other witnesses who watched the fight from the rear—viz., Prince August of Württemberg and Prince Hohenlohe; the latter of whom describes in his "Letters on Artillery" how, as he was talking to the former behind the line of his guns, the corps artillery of the Guard, and as they watched the gradually slackening fire of the French, suddenly the thought struck them both simultaneously, and turning to each other they both cried out, "Now is the time!" but then in the same moment, and

before an aid-de camp could be sent, the whole line rose and rushed for the village.

The regimental history of the 4th Guard Infantry I shall treat in a much more summary manner; it is written with far less ability, and the author is a little too fond of using phrases such as "without firing a shot," etc., which other evidence does not bear out to commend his accuracy of observation to the reader. But as it is confirmed from other sources, I notice his account of the advance of the other regiment of the brigade, the 2d, at the very hottest of the fight, with its three battalions in line (three deep), with "drums playing and with colors flying"—an expression which in Germany means in the "parade marsch" as in an advance in review order, and in this manner not only reached the limit attained by the others already, but some further distance beyond them. Their losses were actually slightly less, even though they were collectively longer under fire than the other regiments, who brought up their battalions successively, and also in spite of their line of advance lying in the zone of the most intense fire.

The total losses incurred by the two brigades from first to last, in an action which, beginning about 4 p. m., lasted till late into the night, reached the following totals:

1st Brigade, 1st Foot Guards, 36 officers, 1,072 men.

1st Brigade, 3d Foot Guards, 36 officers, 1,067 men.

2d Brigade, 2d Grenadiers..39 officers, 1,034 men.

2d Brigade, 4th Grenadiers..29 officers, 913 men.

Total.....140 4,086

About their effective strength on the morning of the fight I have no reliable information to my hand at this moment, but, exclusive of officers and train soldiers, it cannot have been less than 12,000 men; so that the day's fighting cost them in round figures one-third of their strength.

Now, as regards tactical formations and their influence in diminishing loss, what is the outcome of the whole matter? Simply this, that there appears to be nothing whatever to choose between them on the battle-field, whatever the practice-ground experiments may teach; in fact, as it has often been put in these columns before, "The rain falls equally on

the just and the unjust alike, and the longer you are out in it, the wetter you will get." I confess that in reading these detailed accounts I was not prepared to find so much evidence to prove that the fire of the French actually was under a certain amount of control, and was distinctly directed on certain marks as they offered themselves from time to time, but this only makes my contention stronger, that when dealing with "unaimed" fire—and it is the business of the artillery to see to it that the fire to be encountered in the advance is "unaimed"—the style of formation is, within reasonable limits, practically immaterial.

The fact is, the attack, or the idea of the attack, was first mooted under a wrong apprehension of the conditions to be dealt with—viz., that 2,000 yards was well within the killing range of the chassepot. For had one single responsible staff officer been aware of the danger they were about to incur, even though the necessity for attacking was very urgent, he would either have set about it in some other way, or, as at Vionville, sent in the cavalry—not against the village, of course, but against the left flank of the 4th (French) Corps, L'Admirault's, which was at that moment causing or threatening danger to the Hessians and 3d Brigade of the Guards near Habonville. Possibly it would be better to say that the troops would never have been placed in their initial position at all, for, as pointed out above, they were actually within reach of the chassepot almost from the moment they moved off; but to discuss that question would take us far beyond the limits of my space.

The lesson that maneuvering or attempting to maneuver within effective range of musketry fire almost invariably spells defeat, required no new illustration, for it was precisely a similar mistake which led to Frederick's defeat at Kolin as far back as the Silesian War; and the Napoleonic campaigns are full of similar examples—a fact of which the Prussian general staff required no new reminder. The time may have been ill-chosen, and cavalry was certainly the arm which should have been called on to gain the required respite; but had it not been for the losses and confusion caused by the attempt to move to a flank within effective range of the enemy, the attack would probably

have been a brilliant success, and would have gone down to history as an example of what infantry soldiers can achieve.

What the Germans actually did learn from this and similar experiences was—first, the absolute importance of awaiting the result of the artillery fire; secondly, how much the infantry may do for themselves by their own fire in case the moment for attack has been anticipated; for it will have been noticed above, that as soon as the Prussians reached a position from which their own fire could be made to tell, the resistance of their enemy rapidly fell off in its determination; thirdly, no formation is in itself a guarantee against loss, but since the moral power is the decisive factor, no more troops are to be extended than can use their fire-arms with full effect in the front simultaneously: all the remainder should be kept in the hands of their leaders up to the last moment possible. Relatively to the rest of the army, and to any infantry likely to be found in the existing Continental armies, the Guard fully justifies its claim of precedence; for it is evident from the accounts, and also is well known in the army itself, that the percentage of skulkers was remarkably small compared to what was seen on other parts of the field. Possibly, if all corps had done equally well, the type of attack to be seen at any maneuvers in Germany, in which at last the fighting line stands from eight to ten deep, would never have been involved. This overcrowding is, of course, only a peace-time result from the idea of successive reinforcements from the rear to give the necessary impulse for advance, and is intended principally as a school to accustom men and officers to the noise and confusion inseparable from the fighting line. But it is at once apparent how the reduction of loss in any given encounter would be dependent, not on formation, but on the relative superiority of the attacking troops. A superiority which might result, either from the men being from the first better disciplined and of higher courage, or from want of these qualities either *ab initio* or induced by the effect of artillery fire on the defenders.

This deduction is in fact the key to what may be called the “esoteric” side of German tactical teaching, without which the greater part of their literature, and the whole of their drill book, is unintelligible. English tacticians—nota-

bly the Volunteer colonels, who are at present endeavoring to teach the regimental officers of the army how to extract nutriment from the egg of the domestic fowl—always start from the premise that both sides maintain throughout the fight the same absolute position towards each other as regards courage as that with which they started. If this idea was correct, their deductions might commend themselves to us, but it is perfectly obvious—or, at any rate, a very short course of study would make it so—that it has absolutely no foundation, either in practice or theory. Fortunately, our tactical vagaries attract so little attention in Germany that no one considers it worth his while to notice them seriously, but if any of their own writers took to the same line, the contempt with which he would be treated would be lofty indeed. The worst of it all is that we have no one but ourselves in the army to blame for this condition of affairs. Had not the study of military history, particularly that portion of it referring to our own past, been allowed to fall to so low an ebb as it did in the years preceding 1878, no surprise whatever would have been felt amongst soldiers at the tales of slaughter and bloodshed which reached us from France and Germany, and the somewhat hysterical pamphlets which reached us from the other side of the Channel would have found neither translators nor readers. Amongst the educated portion of the German army these writers excited only disdain, for between them they told us nothing essentially new; they all, even including Von Scherff in his first work, showed that either they had never studied—or, at any rate, had failed to understand—their Clausewitz.

Many years ago, 1872, I was sitting in the room of a German officer, many years my senior, and was occupying my time, whilst awaiting his return, in reading a lot of the pamphlets of the day. When he came in, he smiled at my zeal, and going up to his bookshelf, took out a well-worn and battered copy of Clausewitz's "Vom Krieg" ("On War"), and having opened it at the chapter on danger and the moral force in battle, handed it to me saying: "There, if you want to know what war is and always will be, you had better not waste your time over that trash, but study this." I took it, and having read it through,—it was only two or three pages,

—I said: “Yes, it seems common sense, but I am afraid I should not get many marks in an examination for this.” “That is just where it is,” he replied; “you in England study to get marks, we here have to learn in order to safeguard the lives and interests of the men under our command”—a remark which I neither relished nor appreciated at the time, but the truth of which has daily come more and more to me during the eighteen years which have since elapsed.

VON WEDELL'S BRIGADE AT MARS-LA-TOUR,
AUGUST 16, 1870.

The Duke of Wellington is usually credited with the saying that “at the close of every great campaign, truth lies at the bottom of a very deep well, and it takes twenty years to get her out of it.” Whoever said it, its correctness is beginning to be brought home to us very forcibly with regard to the history of the 1870 campaign. For a long time past, English tacticians have been in the habit of relying absolutely for their facts on the truth of the statements in the Prussian official history of the war, and I confess openly that I have often been in the same boat with them in this respect. But during the last few years we have been confronted with a series of other evidences, which go far to undermine one's faith in our previous premises.

As an instance of the slaughter occasioned by the new weapons, the case of the Guard Corps at St. Privat has been cited *ad nauseam*; but, curiously enough, an instance of far worse slaughter, more rapidly inflicted, has hitherto almost escaped our notice, for in the pages of the “Prussian Official” the slaughter, though admitted, has been passed over—principally because it was unnecessary and not crowned by success—in such a way as not to attract attention. But a new work, entitled “Investigation into the Tactics of the Future,” has just been published in Berlin, which throws an altogether new light on the subject, and which proves that, accurate as are the facts stated in the official account in the main, the literary skill of the department of military history in the Wilhelm-Strasse has been able to clothe them in a manner which, if not altogether a direct denial of the facts,

is, nevertheless, very little short of a *suggestis falsi*." We owe this new light to the pen of Captain Fritz Hoenig, an officer who was present with Wedell's Brigade in the action, and who recounts his experiences in a very convincing manner. His story has been before the German military world since 1881, when this particular portion of it was first published in a work called "The Two Brigades," and in which the incidents of the fight of the 28th Brigade at Problus-Bor in the battle of Königgrätz and the 38th Brigade at Mars-la-Tour were made the subjects of an absolutely masterly dissection. The facts brought forward in it have never been questioned, but, on the contrary, though the book encountered most severe opposition from the authorities, these facts, and the method in which they were treated, have met with the warmest acknowledgments of nearly all—except those on whom the blame was shown to lie—of those who were present. As far as my reading extends, I believe the facts, or the story, contained in this work to be in every way the most instructive piece of military history yet placed before us, with perhaps the sole exception of the "Midsummer-Night's Dream." As an introduction to what follows, I may briefly mention that it was Wedell's Brigade (the 38th) which arrived on the field of Mars-la-Tour about 4 p. m., just after the French were recovering from the temporary paralysis occasioned by the charge of Bredow's Cavalry Brigade. It was sent in haste to check the advance of L'Admirault's corps, was driven back in confusion with a loss of 53 per cent, and only saved from annihilation by the dashing charge of the 1st Guard Dragoons (Queen Victoria's regiment), who rode down the pursuing French, and gained time for the Brigade to re-form in something like order. With these few introductory remarks, I will leave the eye-witness to speak for himself; only considerations of space will compel me to "précis" him very liberally.

"The 38th Brigade, consisting of the 16th and 57th Regiments, less one battalion of the 57th Regiment on detachment, and with two batteries and two companies of the Pioneers of the corps attached, had left Thiaucourt at 5:30 a. m. under command of General von Schwarzkoppen. The Brigade of Guard Dragoons with Planitz's horse artillery

battery was about one hour in advance. At 10 a. m. this latter detachment reached St. Hilaire, and on arrival there, hearing artillery fire to the east, they pushed on in that direction, having previously obtained the consent of General von Schwarzkoppen, who must have been perfectly well aware of where the artillery fire came from. The infantry brigade reached the same place at a little after 11 a. m., having marched 15 miles, with only one halt of 10 minutes in $4\frac{1}{2}$ hours (without packs; these had been left behind at Saarbrück, and had never overtaken the troops, the men only carried rolled greatcoats, cooking-pots and their ammunition in the haversack). It was a burning hot August day.

"The enemy was supposed to be retreating on Verdun—and, indeed, partly on the very road by which we were advancing; consequently there was a suppressed feeling of excitement in the staff, and the maps had been constantly studied, and we were agreeably surprised when we occupied the road without any opposition on his part. The five battalions, the two batteries, and the two Pioneer companies took up a bivouac southeast of St. Hilaire, with outposts of the 2d Battalion 57th Regiment, and a squadron 2d Guard Dragoons, thrown out in front; and the troops received orders to cook their dinners.

"At this time I was, with several other officers and Lieutenant-Colonel von Roell, at the right flank picket, and we discussed matters, which usually bear another aspect to the troops to that which they have for the staff. The latter know, as a rule, the why and wherefore of things, which the former do not; and therefore uneasiness is apt to arise amongst them. But here this was not the case, for since early morning we had known the general situation with tolerable accuracy, and our objective accurately. We had promised ourselves great results, and were proportionately astonished when we reached our destination without opposition, though we had heard and seen artillery fire on our right for some time.

"The order to halt and cook, received under these circumstances, afforded matter for consideration, as it well might, for it showed, first, that the commander was determined to remain at St. Hilaire till further orders arrived; and second,

that in spite of the growing noise of the cannonade, he counted on time enough for the troops to finish their meal before these orders reached him. Now, it is certainly a first rule for the leaders to utilize every opportunity to rest and refresh their men by the way, but to halt and cook here meant that the general himself was quite in the dark as to what was happening, and was doing absolutely nothing to find out. We had not found the enemy there where we expected him, but knew from the sound of the guns that he was in action not far off, and therefore his first duty should have been to have strained every nerve to clear up the situation.

"Just as the fires began to burn up brightly, an officer galloped in, his horse covered with sweat and pretty well done up, and immediately afterwards the 'fall in' was sounded, cooking-kettles upset, and the troops set themselves in march. 'Chambley' was assigned us as our objective, and we hardly trusted our eyes when we found the place on our maps.

"At first it had been the intention of the divisional commander to move on Ville sur Yron, almost behind the flank of the enemy, but as we drew nearer, and from our horses could see, from the long lines fringed with fire and smoke, and behind them the dense rising dust-clouds, that a very large force was before us, and as, further, the wounded whom we now began to meet gave somewhat despondent accounts of what was going on, this direction appeared too risky, and he bent off, half right, so as to establish connection with the III^d Corps, a decision which was undeniably sound.

"Amongst others wounded, I met an officer I knew riding back with a bullet through his chest. Almost before I could speak, he said with a smile: 'Well, I hope you will have better luck than we had; it will surprise you, this is no "catshooting" like '66.' That was scarcely encouraging, but there was a soldierly jocularity about his manner which carried it off well. About 3:30 p. m. we formed up for action about 1,000 yards southwest of Mars-la-Tour. The generals, Von Schwarzkoppen (division commander) and Von Wedell (brigade commanding officer), had ridden on in advance to reconnoiter. As they had ample time, and the Guard Dragoons had been skirmishing with the enemy for the last two

hours, there should have been no difficulty in obtaining the required information—more especially since the ground was almost completely open. At this moment the French had it all their own way; they had occupied the high ground above and north of Mars-la-Tour, and from its summit could see for miles around. To turn them out of it, without great numerical superiority, was impossible, and further to their left, and our right, our troops were being driven back out of the Tronville coves, which they had hitherto held. Fortunately, they suddenly checked in their advance, and the only explanation we can give of this is, that the sudden appearance of our solitary brigade threatening their line of retreat seemed to them to indicate the advance of at least a whole corps—for it would have been presuming too much on the incapacity of their adversary to assume that our isolated advance had actually no connection whatever with any other movements. Possibly, too, the capture of two or three of the Guard Dragoon scouts led to the conclusion that the Guard itself was at hand. The position in which they halted was one just suited to their far-ranging weapon; their front and right flank was protected by a ravine which ran along it and then bent sharp to the north, from the further edge of which the ground fell away in a glacis-like slope for three or four miles, broken only by the village of Mars-la-Tour about 1,000 yards to the front; and our approach was rendered yet more difficult by wire fences, which seriously incommoded us, and still more impeded the 1st Guard Dragoons in their subsequent charge. The extent of their position was about 3,000 yards, and was held by Grenier's Division in 1st line and the whole of the remainder of the 4th Corps in support. The open space we had to cross was about 2,000 yards.

"Whilst we were awaiting orders to advance, the Roman Catholic chaplain galloped up to our colonel, and, after a word or two with him, rose in his stirrups and addressed us in the following words: 'Comrades, the III^d Corps is hard pressed, and to you is assigned the duty of relieving them. Attack, therefore, without fear of death, and then God will be with you. Amen.' His manner and words acted like a charm on all, and immediately afterwards the order to uncover the colors was given; the colonel added a few words

in the same spirit, and the march began, the direction being that previously assigned to us—viz., northeast—on the corner of the Tronville copses. At the time this order was given, the French right only extended as far as these bushes, and our movement was intended to form part of a combined attack with ten other battalions on our right on the above-mentioned copses; but long before we reached the ground, the French line had been extended along the position previously indicated. The ten battalions, having attacked prematurely, were at the time of our advance already falling back, so what we really were trying to do was to march diagonally across the front of a whole corps in position with only five and a half battalions, a movement which could not have the smallest prospect of success. But even after the advance had commenced, we were still in complete darkness as to where we were going, or what we were to do when we got there. Generals von Schwarzkoppen and Wedell had decided between themselves, but they only gave the general direction to the regimental commanders, and certainly the battalion commanders knew nothing whatever. My colonel, for instance, said to me somewhat sarcastically: ‘This seems the chaplain’s day; had it not been for him, we should have had no idea whatever as to what was going on’—and this remark expressed about what we all felt. But presently the enemy opened fire on us, on our left flank, and we proceeded to wheel to the left to face him, all the battalions moving up into one line. Of artillery preparation there was no word, for our guns only came into action after we were already under the effective fire of the French. This wheel, of course, took time, and, indeed, was never actually completed, for the pivot flank could not wait, and came in contact with the enemy, and was broken and retiring before the outer flank could reach them.”

This remark is in anticipation to explain what follows, for now our author comes down to the detail of the movement of his own regiment:

“In this movement we reached the southeastern corner of Mars-la-Tour, where Von Schwarzkoppen and his staff officer, Von Scherff, were sitting near us. But a little further to the rear stood two squadrons of the 4th Cuirassiers. Shells were falling amongst them, and as these became more

numerous, they wheeled about and retired a short distance; in their place the 1st Guard Dragoons moved up.

"The troops were advancing briskly, and General von Schwarzkoppen seemed to anticipate the success of the movement; at any rate, as my colonel passed him, and as the violence of the mitrailleur, artillery, and infantry fire was fairly astonishing us, he called out to him: 'Send out strong skirmishing swarms and we will soon get them,' and afterwards: 'Left shoulders up a little on the copsis.' Meanwhile 1-57 had extended two 'zugs' in the above direction, and it seemed as if a wide gap would be formed between ourselves and the 16th Regiment. The general, who noticed this, rode up and ordered a company from our battalion to fill it, which was at once carried out. But the next moment its captain fell, and the men bearing off to their left towards a fold of the ground which seemed to offer cover, the gap was again created, and was eventually filled by the fusilier battalion of the 16th, so that from a very early moment the regiments were intermixed. The above orders were the only ones we received throughout the day.

"The co-operation between the individual battalions throughout the action was practically *nil*. I was on horseback till I fell wounded at the moment almost of our repulse, exactly in the center of the whole line, and could see all round me till the smoke became too thick, and the two battalions on our left were hidden by it.

"The battalions pressed on independently from left to right towards the north, whilst our two batteries fired over our heads. As the I-16 and II-16 were on the shorter line, they managed to penetrate the furthest, crossed the ravine above mentioned, and kept their start over us to the end. The right (Fusiliers, 57th Regiment, and the two companies Pioneers) had the widest arc to describe, and, in spite of every effort, must have reached the alignment some half-hour later. When we reached the beginning of the descent towards the ravine, about 600 yards from the enemy, our order from right to left was as follows: In the fighting line 5-16, 7-16, 3-16, 2-16, 11-16, 2 zugs 2-57, 10-16, 1 zug 2-57, 1-57. In support, 160 yards in rear—8 and 6-16, 4 and 11-16, 12 and 9-16, 4-57, 9 and 11-57, 12 and 10-57, and 2 companies Pioneers. Put shortly afterwards the supports, all except 4 companies,

pressed forward and joined the fighting line, and the order was then as follows: 5-16, 6-16, 7-16, 8-16, 4-16, 3-16, 2-16, 11-16, 1-16, 2 zugs 2-57, 10-16, 1 zug 2-57, 12 and 9-16, 1 zug 1-57, 11 and 9-57, 1 zug 1-57, 12 and 10-57, 1 zug 1-57, with the Pioneers, and two other companies of the 57th Regiment as last reserve 200 yards to the rear. Till we reached the 600-yard limit our losses had not been very heavy, but now we came under an indescribably heavy cross-fire; for we, who had expected, or been intended, to outflank the enemy, now found we were ourselves outflanked. The enemy, who had hitherto lain flat on the ground, now rose and overwhelmed us with a fire which caused us to halt and attempt to return it. This ruined our attack, for the men threw themselves on the ground, which afforded them no cover; two-thirds of the officers had fallen, and after a while the inevitable came, and the line fell back. Part of our line—some eight companies—on the left certainly reached the opposite side of the ravine, owing to their having come on a gap in the French line, but of the remainder none got nearer to the enemy than at nearest 400 yards.

"The work of the general staff has described this attack in a most attractive manner, possibly as a salve to the troops for their tragical fate, but I can only state that its account is pure fancy. I will confine myself to contradicting it in the following points:

"1. The five battalions did not, as therein described, cross the ravine and appear within 80 to 100 yards of the French line. Of the 20 companies, only 8 (the 1st, 2d, 3d, 4th, 7th, 8th, 11th of the 16th, and 2d of the 5th) got across at all; these, having the shortest way to go, and the best cover, anticipated the completion of the French line, and were eventually turned out by a counter-attack. The remainder did not even reach the hither side of the ravine by some 100 yards.

"2. The needle-gun and chassepot did not act with 'devastating fury' against each other, for the former hardly got within its effective range, and we suffered our losses without the power of retaliation.

"3. After we had already commenced to fall back, the French got within 50 to 30 yards of us, but this was due to the density of the smoke of our own weapons, under cover

of which they made good their advance, and if in places it came to a hand-to-hand struggle, it was because our men were too exhausted to run away fast enough.*

"4. It was only in the retreat that the losses rose to the point of dispersing us altogether. Fortunately for us, as the enemy had passed the limit of our advance by some 150 yards, the 1st Guard Dragoons attacked them, and rode them down. They ran back, masking the fire of their own lines in rear, shooting wildly in every direction, and throwing kits and arms away in their panic. Then followed a general pause along the whole line, even the artillery ceased firing, and the battle appeared to be at an end.

"The 38th Brigade had marched 25 miles under a burning sun to the battle-field (without packs); between 2,500 to 2,000 yards from the enemy one-third of each company had been extended as skirmishers, by the general's direct order, who rode about saying, 'Only skirmishers, gentlemen, only skirmishers,' to all the officers he met; and shortly afterwards each company in first line reinforced its skirmishers with a second zug, keeping only a single zug as support in close order. The second line was formed of half-battalion columns. Finally all were merged in one shooting line, except two companies, who remained in close order, lying down by direct order of my colonel, who remarked, as he gave it, that he did not expect much from the style of fighting going on. And to complete the picture of the last moment, companies 12 and 9 of the 16th lay in close order on the ground; companies 9, 10, 11, and 12 of the 57th stood upright in line (firing volleys over the heads of their skirmishers), and made one attempt to go forward again to the attack.

"Every sort of formation was, therefore, tried—line, column, and skirmishers—on a field of battle which bore only one character.

* The picturesque, but not very candid, account of the attack in the "Official History" contains the following: "With regardless energy, however, the Westphalian regiments press onward; the second line moves up to the skirmishing line in order to fill the vacancies in the rapidly thinned ranks; only weak detachments are left in close order behind the front. Alternately making rushes of 100 to 150 paces, and lying down, the companies hastily descend the hillside. Here comes unexpectedly to view in their front a steep ravine, in places hard on 50 feet in depth, like a ditch in front of a strongly occupied entrenchment; but even this obstacle does not stop their advance. Scaling the opposite slope, all five battalions rise quickly to view within 150, 100, yea, even within 30 paces of the French line." [Clark's Translation, Part I., Vol. I., p. 407.]—A. L. W.

"The regiments of the brigade stood side by side and covered a mean distance of 1,500 yards under a heavy fire from troops previously unshaken by artillery, and lost in doing so 72 officers and 2,542 men, out of 95 officers and 4,546 men. They advanced steadily in quick time, and not by rushes, and did not halt till compelled to do so by the enemy's fire."

I propose next week to summarize the author's criticisms, which, though somewhat long-winded, are for the most part very valuable. In concluding this letter, I would only again call attention to what I noticed in the case of the St. Privat attack—viz., that it was the general, and not the regimental officers, who trusted in extended order from the first.

What possible object it could serve to extend one-third of the men almost 2,000 yards before they came up to the limit of the effective fire of their own weapon, I leave to wiser heads to discover. But, judging by his subsequent writings, Von Scherff, who was present as the general's staff officer, does not appear to have been favorably impressed with the value of this course.

In my last week's letter I followed the brigade up to the moment when the advance to the attack was begun, and pointed out how over-haste and hurry on the part of the commander led to their moving off even before the change of front to the left was completed, so that the right wing (the 27th Regiment) was racing to get round into the new alignment, which indeed they never succeeded in reaching. This is how Major Hoenig describes what followed:

"Up to within some 200 yards of the dip into the ravine the two half-battalions in support of the inner flanks of the two regiments advanced level with one another; here the half-battalion of the 57th lay down by command of Colonel von Roell; the half-battalion on our left continued their advance. I was about 40 paces on their right rear. At this moment a color-sergeant of the 2d company 57th, which it will be remembered had been thrown into and between the companies of the 16th Regiment by direct order of the general, came up to Colonel von Roell and reported that his 'zug' would no longer follow him; he had repeatedly risen and

gone in front of them, but they would not get up. The colonel turned to me and said, 'Ride back with him, and see what you can do.' I went, but most of the men lay dead or wounded on the ground in the ranks just as they had stood. With the aid of some few devoted men and the color-sergeant—a real hero in the truest sense of the word—we succeeded in getting some of the survivors to go on. The rest attached themselves to the advancing half-battalion in support, which now pushed forward and joined the shooting line. I returned and found the colonel where I had left him. On our right another half-battalion of our regiment has just deployed and fired a couple of volleys, apparently into the backs of the company in front. The colonel turned to me and said, 'We must get some order into the state of things; the Fusiliers (57th) are firing into my 1st company, the 16th have carried away my second. If only Bernewitz (commander of the 3d company) with the flag will look out. This is simple hell.' We rode forward together, and so came in rear of the fusilier battalion of the 16th, which was lying behind a small hedge; and this is the picture that we saw: The colonel on foot, at his side the adjutant severely wounded on the ground, both their horses dead behind them. A captain, Ohly, still on his horse, close to him the colors; he had a rifle in his hand, and was alternately encouraging his men and shooting at the enemy. Skirmishers lay on either flank and in front, but the half-battalion which this officer commanded, and which has been referred to above, was still in close order. A few shots only fell from our men, there was no regular fire fight. The colonel of the Fusiliers (16th) begged my chief to dismount, which he did. The next moment his horse reared up and fell over dead. He knelt down by the side of the others, who said, 'We have a little cover here; as long as the fire continues so heavy we must stay; their ammunition cannot last for ever.' A moment or two later the regimental adjutant of the 16th, Lieutenant von Wolzogen, rode up. His white charger was bleeding from several wounds; but he himself was unhurt, and as calm as on church parade. He reported: 'My chief is dead, and we have been repulsed.' Scarcely had he said this when out of the hollow in front, and not 100 yards distant, the enemy rose up with shouts of 'En avant! en avant! Courage! courage!'..... My colonel shouted one

last order and fell dead; then everything went back.... Up to this point, though our losses had been very heavy, yet they had not been sufficiently severe to rob us of all defensive power; but the attack was too sudden; favored by the ground and the dense clouds of smoke, the enemy had managed to bring a vast numerical superiority right up to our muzzles, and the impression was too much for the nerves of the men. Had the French not stopped to plunder our dead and wounded, it would have been all over with us.

"About this moment I myself was wounded, but, supported by a couple of men, I managed to drag myself a little way back; but then both of my bearers were hit, and we all three lay together.

"The French had halted a few moments, but soon resumed their advance and now passed over us: first a skirmishing line, then a second, also in extended order, and finally a battalion in line; it was a moment of horrible suspense for us. The first line was firing briskly, in the second everything was in disorder; each man seemed to be trying to keep his pluck up by shouting 'Courage! En avant!' but no one took any notice of his neighbor, but devoted himself to robbing the fallen. This was the moment in which the 1st Guard Dragoons attacked; the enemy's infantry was thrown into complete disorder, but on the whole *remained on its ground*. Their fire ceased, however, and there was an opportunity for rallying and re-forming what remained of the brigade. But here occurred an evil *contrestemps*. An adjutant galloped across the field from left to right, shouting with all his might, 'Retreat on Thiaucourt!' I raised myself up and took a last view of the scene all round me—killed, wounded, and a terrible wailing, and on the top of all, this order; could I form any other conclusion but that all was lost? The regiments had lost almost all their officers, and the men were retiring in every direction; actually, the majority only rallied to their flags about noon the next day. This is an example of how not to give orders on the battle-field. The over-hastiness which had ruined our advance was now equally fatal in the retreat. All were, however, not so indiscreet. The artillery fire had again re-commenced with great violence, when I saw Lieutenant Neumeister, of the staff of the 10th Corps, riding quietly at a walk across the field, halting

now and again to give orders. A man of really iron character, he deserves the highest praise for his coolness and devotion to duty. He it was to whom the credit of bringing order out of chaos is principally due. His calm bearing revived our sinking spirits; everything then was not as yet lost.

"The retreat of the 38th Brigade was the most terrible drama of the whole war. It had lost 53 per cent of its strength, and the proportion of killed to wounded was as 3 to 4. The burning heat, the preceding forced march, and the racing pace at which we had attacked had done their work. The soul had no longer power over the body. I saw men crying like children; others fell dead from exhaustion; most had only one thought—viz., for water. 'Water! water!' was almost the only cry one heard from these shadow-like bodies. The enemy's bullets still hummed and whistled after them, but slowly, with drooping heads and distorted features, they wound along, too dead-beat to feel their danger. A couple of smart squadrons of lancers, and not a soul would have escaped. Whoever has once looked on the faces of men in such extreme moments can never forget the impression of absolute insanity they convey—insanity brought on by over-exertion of the body and the horrible strain on the mind. Through the broken remains of the infantry rode here and there individual men of the cavalry, their swords still extended forward at the engage, but horse and rider perfectly mad, still under the impression that they are charging.

"'Where are your officers?' asked the men in the batteries of the stragglers. 'We have none left,' was the answer, and with few exceptions this was almost literal truth; but these few did what men could do to rally the men, and with partial success, for some did succeed in getting together from twenty to forty men and marching them off the field in order. One fact in particular deserves to be borne in mind, and that is, that in no single case did I see a man throw away his arms or accoutrements."

It is unnecessary to follow Major Hoenig into his researches how the brigade should have been handled, for the mistakes made are too self-evident, and a positive result against such enormous odds out of the question; but the following notes as to the formation actually employed, and the

duration of the attack, will be useful for those who believe the secret of victory to be in the use or disuse of certain formations.

"At 2,500 meters from the enemy, the 2d battalion 16th was in line of company columns, and next to it the 1st battalion with two companies in first line, each in column, and the remaining two following in half-battalion column, and the fusiliers of the same regiment in similar formation.

"Then came the 1st battalion 57th, two companies wholly extended almost from the first, and the other two in company columns. The fusilier battalion stood originally in column of double companies on the center, but broke in two half-battalion columns on entering the zone of fire. The two pioneer companies remained in company columns. As the fight progressed, they all melted into skirmishers, except one half-battalion of the 16th, two company columns of the same, and the Pioneers. These closed bodies were brought up with drums beating and colors flying into the fighting line, and carried it forward a little, and, as far as one can make out from the table of losses, suffered on the whole slightly less loss than those which were extended; but the rout at the end renders it useless to attach any importance to those figures.

"As regards the duration of the attack, as near as can be calculated, 2,000 meters was passed over in about 30 minutes; the troops held out in the position they had reached about the same time, and the retreat lasted nearly as long. As to the expenditure of ammunition, it is impossible to give more than a vague estimate; it was, at any rate, very slight. The fusilier companies of the 57th did not, according to their officers, fire more than 3 to 5 rounds per man; and the rest about 10 or thereabouts; making a total of about 20,000 rounds. The French, on the other hand, are estimated to have expended at least 1,600,000 rounds; and comparing this with the number of killed and wounded, we get one Prussian *hors de combat* for 760 rounds; and this in spite of a far-ranging, flat-trajectored weapon, and a perfectly open field of fire. One cannot help wondering what the result would have been had the artillery preparation been thoroughly carried out first, and the Prussian rifle been equal in the above qualities to that of their adversaries.

"The French return their own losses at 200 officers and 2,258 men, which must all have been inflicted by the 38th Brigade, its two batteries, and the 1st Guard Dragoons. But, as above pointed out, the infantry only fired 20,000 rounds, and there was no particular artillery preparation. These figures appear incredible, even to the Germans themselves, but, though enquiries have been made in Paris, the French stick to their figures. Possibly the artillery fire during and after the retreat may have been more effective than supposed.

"It is a fair assumption that half the German losses were inflicted on them in the retreat. The five battalions, or 4,500 men, lost, therefore, in advancing a mile across the open under fire, 36 officers and 1,016 men, about. And this in face of a fire whose quantity could not reasonably be increased by the introduction of the magazine rifle, for the numerical superiority must be taken into account. But the brigade reached the effective limit of fire of their own arms, still in a condition to continue the struggle. The formations adopted, therefore, justified themselves, and the reason for the defeat cannot fairly be attributed to them, but can only be found in the want of skill and unity in the command, its numerical inferiority, and general ignorance of the state of things on the side of the enemy."

I think the above, and the account of the attack of the Guards at St. Privat recently published in these columns, ought pretty well to break down the received ideas on which our recent infantry tactics have been based. These ideas may be reduced to the contention that, in face of the modern arms of *precision* (? one man disabled for 760 rounds fired), troops can only advance in extended order. Yet in both these two examples, the bloodiest in the whole war, we not only find that they did advance in close order, but that the companies that did so not only did not incur heavier losses, but pushed up to the front and carried the wavering line of skirmishers a little bit further with them. The disproportion in the numbers was altogether so overwhelming in the case of the 38th Brigade that more could not have been expected of them than what they actually accomplished; but this very disproportion settles, to my mind, conclusively that, under reasonable conditions as to armament and num-

bers, the possibility of an advance in a similar formation—i. e., skirmishers in front and line or small columns behind—is by no means precluded, and, indeed, that as regards suitability for the end in view in a decisive attack, close order has altogether the best of it. For the object in such an attack is to win at any cost, for the bloodiest victory is cheaper than defeat, and the possibility of victory is primarily dependent on the number of rifles that can ultimately be brought to bear. Taking into account the tendency to "skulk" now admitted by the Germans themselves, and it is evident that close-order formations will deliver a larger number of rifles on the line of skirmishers than any other formation, and it will depend entirely on the quality of the troops themselves what degree of closeness is considered necessary, though under ordinary circumstances the choice will be between company columns and line two deep. It will matter nothing, if, when the lists of killed and wounded are made out the day after the victory, the percentage of loss stands a little higher than may seem to the critics to have been necessary. Success is the only criterion, and that success may fairly be attributed to the all-compelling power of discipline and the habit of close-order training, which rendered it possible to deliver the right number of rifles in line at the right place. All experience proves the difficulty of forcing men on in face of heavy loss in individual order, and that a far higher percentage of loss can be borne by the line, though the exact ratio is impossible to arrive at; but it may reasonably be assumed as 1 to 2. Let us assume the fire of 2,000 rifles at 400 yards as requisite to turn an enemy out of position: then if 20 per cent is the highest loss troops trained principally to open-order fighting can be got to advance against, then probably 10,000 men will have to be put in to bring the fighting line up to the required strength; but if close-order training forms the groundwork of their military education, then probably 4,000 will be amply sufficient, for, since they will continue to advance under losses which would have brought the others to a standstill, fewer reinforcements will be required, and the total time under fire will be correspondingly diminished. Of course, in either case the fighting line must be in extended order, because that extended order is

required to develop its fire effect to the fullest possible limit; but what is meant is that the basis of all infantry training should be discipline and concentration of will in the old close-order school, and not the training of men to avoid losses. What that means, the pages of the "Midsummer-Night's Dream" show us pretty graphically. What the other signifies, Albuera, and the countless other exploits of the line, whose names are borne on our regimental colors and those of the German army, are there to testify; and since the nature of man changes but slowly, I believe that the same contempt of death can be induced by training nowadays as it was then; for, to my mind, death and disablement are just as unpleasant to face, whether from the muzzle of the latest improvement in repeating small-bore weapons or from a ten-rupee jezail—indeed, to the thinking mind the latter is the more terrible, as it carries the larger bullet of the two.

Major Fritz Hoenig's work is not exactly conspicuous for lucidity of arrangement, and he is terribly given to repetition. His book is divided into two parts—the first historical, and the second "psychological," as he chooses to call it; and in the second he goes over much the same ground as in the first, with the addition of more personal experiences and observations, many of them of very great value to all English soldiers who really wish to grasp the true principles of their profession. For it must be understood that the current notions on the nature of breech-loading fighting in Great Britain at the present are almost entirely based on false premises; chief amongst which are the three so often combated in these columns—viz., that the losses in battle were: 1st, abnormally heavy; 2d, that they were due exclusively to the breech-loader; and 3d, that experience proved that troops could only advance to the attack in extended order. Actually every one of these premises is directly contradicted by facts, and the bulk of German regimental officers who were eye-witnesses of the events themselves have long been aware that it was so. Only for many and obvious reasons they have not chosen to publish these facts to the world. Whether they will be grateful to Major Hoenig, I am doubtful; if they are, they will give proof of great magnanimity.

After reading the book most carefully, I am inclined to believe that the real motive of its publication has been to inform the junior officers, who have hitherto had no war experience, what the battle-fields of '70 were really like, and thus prevent them from falling into the same errors as we have done; and this I should think it was admirably calculated to effect, as it strips the gilt off the gingerbread in a very wholesome manner. But I will let the author speak for himself. The introductory portion of the second part is so admirable that I give it almost *in extenso*.

"Frederick the Great conquered the armies of half Europe, not so much because his tactics were better, as regards form, than those of his enemies, but because they were based on a more thorough appreciation and knowledge of the human factor, the soldier. Where he asked too much of them, as at Kolin, his grenadiers were swept away in spite of their iron discipline, like the 38th Brigade at Mars-la-Tour. The great king was above all things a student of humanity, and used to announce his discoveries with a straightforward truthfulness that no other general has ever excelled. His army was in the full tide of its success when he wrote to his generals in one of his tactical instructions: 'The Prussian soldier, taken in the mass, is naturally indolent—i. e., does little or nothing on his own initiative, but requires to be driven.' That no one dies willingly, and that naturally every one's chief desire is to preserve his life and avoid danger, is true now as it was then. If one keeps that idea before one, it is possible to approximate an idea of what may reasonably be expected from the self-sacrifice of the individual, and what remains to be done by discipline and the example of the officers. This nature of the man must indicate the forms which are required to combat this natural 'indolence.'

"The great majority of our men are only impressed by deeds, and therefore the king honored every bold action, in order to stimulate the emulation and courage of the officers, to enable them to react on the men. His successes in the attack were based on a recognition of the fact that a check in the forward motion is generally synonymous with failure. Hence he allowed no artificial pauses for rest or to get

breath, but strove all he could to avoid them, and sought to attain perfection, inspiring the officers with a feeling of honor, and developing in them a power of will, which quailed before no losses. That was their 'education.' The moral effect of fire is, as a rule, much greater than the actual losses it inflicts, and this is more the case now with magazine rifles and high explosive shells than it was then; and that system of tactics which enables the example of the leaders to do most, must still be theoretically the best. His frontal attacks were even more bloody than any executed against the breech-loader, but the iron discipline and the example of the leaders triumphed over all. In the main, his principles were those of the 'Midsummer-Night's Dream' school. The soldier fired only by word of command, and only at the shortest ranges, but then with a rapidity hitherto undreamt of (five volleys a minute), and every effort was made to keep the ranks closed. But the difference between then and now lay in the fact that the prospect of heavy losses was taken into account from the first, and every effort made to teach the troops to endure them, whereas now the tendency either is to consider the individual too much or too little, assuming that even on the battle-field he will work with the precision of a machine bereft of nerves and their functions. Meckel is the exponent of one extreme, and Boguslawski and his school of the other; the former making of the company (or small unit under an officer) a shooting machine working automatically under the officer's control; the latter making demands on the individual heroism of the man which only an army of heroes would be capable of attaining to. But of all the factors which condition a man's actions, self-preservation lasts longest; the others melt away sooner or later in presence of danger, but the latter waxes only stronger; and if the system of training leads the men to suppose that the care of their own life is the primary consideration, and it is theirs and not their leaders' to choose when they are to give it up, no prospect of success lies before them."

Then follow two or three exceedingly interesting pages, but a little too tedious for ordinary readers, the gist of which is that compromise is the common-sense way out of the difficulty; utilize the heroism of the individual man as far as it

goes, but when whistling bullets and shrieking shell splinters have taken off the first edge of their gallantry, be prepared to back them up by men trained to follow their officers, and train those officers as in fact only officers can be trained — viz., by tradition, honor, and strength of character above the fear of death, which with short-service soldiers (i. e., three-year conscripts) is an unattainable ideal.

As regards the possibility of so training them (the officers), what he says is deserving of close study, particularly by those who have not yet undergone the ordeal by fire. First the sense of "responsibility" must be brought home to them. This compels a man to think and to train himself, and fills those who have it in them to become leaders with a feeling of duty and of confidence in themselves; weaker natures are frightened at responsibility. The system of training, therefore, should be such as will weed them out. Although exceptional strength of will is rare, still a certain degree of it can be developed in all men who are not absolutely vicious or cowardly; and by a course of moral training like that which Madame Blavatsky's *chelas* are said to undergo.

"Only under pressure of responsibility will a man put his heart into his work, and responsibility teaches a man to think, but close thinking is precisely the hardest exertion of all, if it be continuous." Axioms, the truth of which will be recognized by all who have ever been through the mill, and which seem to have been written expressly for the British army, for the most striking difference one notices between our officers and men of the same families and education, but engaged in civil life, such as barristers, engineers, etc., is that the former, though frequently full of information, cannot think, and seem unable to co-ordinate in their minds facts in their relative order of importance. But to return to our author:

"Responsibility leads to the development of a proper feeling of pride, with its concomitant power of feeling shame; and these two together are the most important moral lever for overcoming temporary weakness;" and then follow passages in his own life almost as remorselessly directed as Marie Bashkirtseff in her now celebrated diary discloses

her own secrets; and from these experiences he deduces the conclusion that what was possible for him is possible for all other ordinary characters; and therefore that it is just and expedient to make sharp examples of those who cannot overcome their natural weaknesses. Again a lesson we would do well to take to heart, for the knowledge that such punishment was inevitable would do much to steel a weakening resolution. "When an army only consists of the lowest classes of the population, then the officer is *everything*, and his men nothing more than automatons; but when such men find themselves in a really tight corner, then nothing can hold them. Where, on the contrary, the army embraces all classes in its ranks, then the interval between officer and man is correspondingly reduced, and nothing can be effected by the old methods of compulsion. As false, therefore, as it is to hope everything from the maintenance of the tactical formations of Frederick the Great's day, just as false is it, on the other hand, to wish to banish all close-order forms from the battle-field; because then all leading is at an end, and the majority of the men would never be brought within effective attacking range at all. Therefore the men must be trained in both directions, so that the superior leading may avail itself of either power according to the circumstances of the fight."

We now come to the psychological dissection of the events of the 16th of August in as far as they concern the 38th Brigade (Von Wedell's):

"The 38th Brigade had accomplished the distance from Bingen (on the Rhine) to Pont à Mousson in 10 days, and, in spite of great hardship from the heat, had borne their exertions well. During the march news of victory had reached it from all sides, so that the men looked forward, full of confidence, to their first meeting with the enemy. I am no friend of such expressions as 'burning with battle ardor,' for they are only misrepresentations of human nature, which would rather shun danger than encounter it. But in this case the reckless declaration of war had wounded the feelings both of king and nation, and as a consequence the love of country of the troops was inflamed to the highest degree. The aim of the general had become that of the army and of the nation,

and every one was prepared, and actually did do, all that in him lay to carry it out; and what we did, equally with what we failed to do, shows the extreme limits of what national passion can achieve. For even in peace-time the march would have been an exceptional one, and would not have been accomplished with so small a percentage of stragglers." [Unfortunately, the percentage is not given, but appears to have been about 10 per cent, which, considering half the men were reservists, in no training for marching, and in new boots, is certainly a very low average.]

"But a battle with its thousand-fold dangers, in which the life of the individual appears to be directly threatened, and each remains constantly under the impression of danger, requires a higher grade of will-power. If on the march, the quality is apparent in the determined endurance of hardship; on the battle-field a higher 'potential' is required; the man who would march till he dropped cannot be induced to leave his protecting shelter and go forward across the bullet-swept ground in front of him, either by command or by the most daring example; and the sergeant, who through a long service of peace and war has won the reputation of being a brave soldier, and who, moreover, is supposed to possess a degree of moral superiority, and has been called to the honor of carrying the colors of the regiment, those symbols of all military virtues, throws himself flat on the ground the moment the eye of his officer is no longer on him, and only for the moment will the flag wave above the field when the cry of 'Fahne hoch!' ('Raise the colors!') recalls him for a few seconds to a sense of his duty—only for a few seconds, for self-preservation is the first law of nature, and only heroes can break through it.

"Who would lead troops must be a judge of men, and the officer must never forget that the measure he applies to himself can only be applied to a few of those he leads. Will, determination, devotion, and courage, even in the bravest, are not always at the same tension. It is not to-day what it was yesterday, and changes with a hundred conditions, such as the man's health, state of hunger, etc., a fact which every one can ascertain for himself; but it cannot be denied that the troops of the 38th Brigade went* into action under the

most favorable conditions possible for the development of these characteristics. But did these suffice to save them from defeat and its inevitable consequences? No! They fell back so completely broken that they did not even think of defence. Hence it follows that there is a limit to what may be accomplished, even where all these characteristics are present in their highest development, and this limit must be recognized by the leader, so that he learns to limit his demands to the attainable, and does not live in a world of illusions.

"I do not hesitate to confess that the impressions of the fire we encountered at Mars-la-Tour shook my nerves for months afterwards. Troops who have been through such an ordeal are shaken for a long time, both the officers and men. Even Skobeleff, to whom none will deny the possession of the rarest qualities of personal courage and restless activity, made the same admission as to his own command after the three-days fighting at the Green Hills at Plevna, and yet his losses in the whole three days fell far short of ours at Mars-la-Tour (42 per cent against 53 per cent); and sober men who know what war really is will recognize the truth of my statements. The only courage which can stay is based on self-conquest, and not the mere expression of physical health and strength."

Notes on the Battle-Field and the Enemy's Forces.

"Of the fighting line of the 10th and 3d Corps east of Mars-la-Tour we could only see four batteries in action, but already from a point a little south of the great road, Mars-la-Tour, Vionville, one could take in the French position, which stretched from the height (846) on the map of the Prussian official account westwards up to La Greyère Ferme (about 3,500 yards), and was occupied by long deployed lines of infantry with groups of batteries in the intervals, whose shells were already falling in and beyond the village. To form an accurate estimate of their total strength was impossible, but it was certainly not less than a whole division. It was 4 o'clock as we moved off to the attack.

"I would here ask, first, What had been done to reconnoiter the enemy's position? and, secondly, Is it possible that

what we all saw from the troops was not seen by the general, who had occupied the very spot over which we advanced for some time previously? and if he did see it, what steps were taken to bring it to our knowledge?

"Judging by what followed, nothing whatever of what should and could have been done had been attended to. A general who on the maneuver-ground ventured to run his head, without previous reconnaissance, against an almost unassassable position, occupied by a five-fold numerical superiority of men armed with a far superior weapon, would at once, and very rightly, have his services dispensed with. The excuse that we were making a flank is untenable, for a flank attack with such a weak front as was here the case would be folly; but a flank attack which, instead of being directed on the enemy's flank, is really sent in diagonally across his front, and so is itself taken in flank, and at the same time encounters obstacles in the ground (wire fencing and the ravine) which could not have been known or anticipated by the executive officers, can only end as it did in this case. But though the whole of this ground had been in our hands for the last six hours, not one word of the difficulties to be encountered had been allowed to come to our knowledge; and one is inclined to question all one hears as to the way in which our cavalry fulfilled its mission as scouts. But failing this knowledge of the ground and the approximate strength of the enemy, what premises remained on which to base a properly considered tactical operation? But no, every one was in too great a hurry. The brigade was sent in even before it had completed its deployment; for, as already related, on arrival on the ground we stood with our front almost perpendicular to the enemy, and were in the act of changing front to the right when the order to advance reached us, and we moved off before completing it."

PRESENT TACTICAL TENDENCIES IN THE GERMAN ARMY.

In recent letters I have dealt with Major Hoenig's views as to the action of the 38th Brigade at Mars-la-Tour, and the deductions he draws therefrom, and I trust I have been able to enlist the interest, if not the sympathies, of my readers

on his side—which side is, indeed, merely the common-sense view of the events as they actually occurred, and not the theoretical aspect of them as they presented themselves to interested “exploiteurs” of new fads, who wrote their histories or chose their facts to fit in with their fads, instead of adopting the reverse process.

Signs are not wanting that the common sense of the army is beginning to rebel against the extremely theoretical views on tactics that it has been the object of our text-books and instructors to cram down our throats; but the danger is that, when the inevitable reaction comes, ideas should swing to the other extreme and adopt, as recklessly as the other side did before, the extreme views contained in the “Midsummer-Night’s Dream,” the translation of which is now appearing in the *United Service Magazine* and which, to judge by what one hears around, is being only too readily absorbed by those who take an interest in the question.

I think it may, therefore, be of interest to lay before my readers the following précis of a chapter of Major Hoenig’s new book already referred to, which will give a very good idea as to how the matter at present actually stands between two extreme schools in Germany—i. e., how the bulk of the army actually interprets their own regulations in the light of the teaching of the past.

According to Major Hoenig, the primary cause of the heavy losses incurred during the early battles of the war was the failure of the proper responsible authorities to communicate to the troops the result of the experiments with the chassepot rifles—the consequence of which was that both leaders and men entered the campaign with an uncomfortable feeling of distrust in their own arm, and, according to their personal idiosyncrasy, an exaggerated dread of, or contempt for, the weapon of their adversary. The result was [I am not quoting his exact words, but trying to give the spirit of several pages of his book in a sentence], that when the bullets began to fly and men to drop at distances of 1,800 yards and over, a feeling of uncertainty took possession of all, and the troops simply ran away in the direction of the enemy. The confusion resulting from this style of fighting led to enormous avoidable loss, without any adequate return,

and this confusion, being the salient experience of all, was seized on by both parties, which presently developed themselves, and which indeed were already in existence to a certain extent, and made the basis of two opposing schools of tactics, of which the one argued that the confusion was the direct consequence of the breech-loaders' fire, the other that it was the outcome of insufficient steady drill.

The former school were first in the field, and it is their writings which hitherto have had the widest circulation in England—due to the fact that these have been the only ones translated, and not to any inherent value in the pamphlets themselves. Its chiefest exponents are Boguslawski and Keim, with Tallenbach and a host of other writers of lesser ability. Their motto is "Organized disorder," an idea they borrowed without acknowledgment from an earlier writer, who, as far back as 1800, fell into the same mistake with regard to the tactics of the French Revolution—viz., that troops require no compulsion to face fire, but rather enjoy it than otherwise. So they may the first half-hour or so, but not at the end of a long day's fighting, or after a couple of reverses. They were good enough to admit that education was required to fit them to fight in this fashion; but they seem to have built their structure on an ideal type of recruit, which one very seldom sees in Prussia or anywhere else. Their one idea of carrying through a combat is the development of a superiority of rifle fire by skirmishers enveloping the point of attack; and, logically speaking, they would not tolerate anywhere within range of the enemy a closed body in any form, but all troops behind the fighting line should move in rank entire at open intervals—i. e., in the form of the line without its spirit. But one has only to picture to oneself the appearance of a battle-field with even 100,000 men engaged on either side to see the utter impracticability of the idea.

The opposite school is represented by Meckel and his followers, and the "Midsummer-Night's Dream," though not written by him, may be taken as fairly representative of his view. And there can be no doubt of the numbers who more or less follow him. In fact, he may be considered as the exponent of the military Tory party; of all who consider them-

selves guardians of the old Prussian line traditions; and even in Austria he has many supporters. I confess to being a believer in him myself, and consider Hoenig hardly fair in assigning the extreme views of the "Dream" to him—but it is just as well to hear the worst that can be said of one's party outright:

"This party strives after an ideal too fair for this workaday world. It is the exact opposite of the former, and I say with absolute conviction that it is based on a similar false psychological foundation. They will have nothing to say to long-distance shooting, and will hear nothing of skirmishing fire and skirmishing forms on the battle-field; their conception of fighting is the advance of small units of automata, controlled absolutely by an officer, to ranges of 200 to 300 yards, and then volley-firing—i. e., they demand the impossible from their own point of view. But their demands are none the less dangerous because actually impossible; for in peace, when the bullets are not flying, their ideal is not only possible, but very much the most convenient. The chief representatives of this idea have concentrated around the Berlin drill-ground, and thence their views have been spread as those of men having authority; and if before 1888 war had broken upon us, against a respectable enemy, then we should probably have had many bloody lessons to learn—nay, possibly the Berlin drill-ground might have proved again, as it did in 1806, the point of origin of the destruction of the State. Every one-sidedness in tactics leads only too surely to stereotyped attack formations, and these—to defeat; but this very one-sidedness has found supporters even amongst men who otherwise have given proof of ability and power. Those who in 1806 bore the blame for the misfortunes of the country were neither stupid nor ignorant; they were not even 'unsoldierly'; it was merely their misfortune that there happened at the time to be no counter-current of opinion against which to test the value of their ideas.

"It is particularly noticeable that it was precisely amongst the very troops whose experiences at St. Privat ought to have taught them better that these ideas principally struck root. These very experiences ought to have proved to them that there was no short-cut to victory for any

one arm alone, but that the united action of the two arms, artillery and infantry, is requisite to ensure success. Instead, they tried to find the cause of our disasters where they were not—viz., in the forms employed, and not in the place where they actually originated, the faulty collective leading and adaptation of means to the end in view—and in so doing gave themselves over into the hands of their opponents, the Boguslawski school.

"Between these two divergent ideas there lies, however, a middle way, the principal promoters of which have been Von Scherff, Liebert, and Von Arnim; these will have nothing to do with extremes of either class, but desire individual fire and individual order for the fighting line, and forms which are susceptible of command—i. e., small columns or lines for the troops in rear. They demand, further, a thorough preliminary reconnaissance of the ground in front, so that the most can be made of it for purposes of covered approach, and the troops be kept in hand to the last moment possible. They do not relinquish in advance the possibilities of distant fire, but still prefer to retain the fire in hand as long as possible, in order then to bring its full power to bear; and, on the whole, their ideas are covered by the new regulations of 1st September, 1888.

"If anyone will take the maps of the scene of action of the Guard Corps and the 38th Brigade at St. Privat and Vionville respectively, and follow the course of both fights carefully, he will be compelled to admit that, even under present and probable future conditions of fire-arms, there is no reason to suppose that it would be impossible to bring up closed bodies of troops to within 600 yards of the enemy's position; and more we do not, as a rule, require. Worse circumstances and higher requirements can hardly occur or be demanded of troops. Only in the case of the 38th Brigade in particular, a more reasonable balance of numbers, and a more thorough preparation by artillery, would be required; but these two conditions fulfilled, there is no reason in the nature of things why whole brigades, still under control, should not be brought up to the effective range of modern rifles (600 yards), but from that point forward all possibility of leading ceases, and the result would depend on the courage and dash of the individual units themselves.

"With these two examples before one's eyes, it is possible to predict with tolerable certainty the course the struggle would take if all close-order forms were abolished, and the attempt made to advance 2,000 yards in successive lines of skirmishers. Where the front is so limited, there is literally no room for the deployment of a sufficient number of rifles for the fire fight; and to support each other at the proper time, the open lines would have to follow each other so closely that, with the flat trajectories of modern arms, no practical diminution in the losses would be attained, and the difficulty of bringing troops forward without the moral aid of the shoulder-to-shoulder formation would render the whole mass a rabble impossible to drive forward at all. The men would throw themselves down and decline to get up again; and in the end not one man in five would arrive in the shooting line; and this reinforcement would neither bring with it the necessary impulse for a rush forward, nor even make up for the losses already incurred.

"It is not the question of 'forms' which is the burning one, but rather the handling of the troops of all arms in combination, and their employment with due regard to the nature of the ground and the momentary condition of things."

To me it seems that to a considerable extent all three schools base themselves too exclusively on the purely infantry views of a battle, and ignore the point of view of the leader in supreme command. To a great extent also they shut their eyes to the teachings of the past, and hastily assume that the type of encounter that took place in 1870 is a fixed form, incapable of variation. This I believe to be a fundamental error; the form the battles assumed was conditioned by the want of experience in "battle leading" on both sides, which led to the employment of the troops everywhere in driblets, and nowhere with any definite purpose, and furthermore, by the fact that the French resistance was generally broken in what in the Napoleonic era would have been the preliminary stage of the fight only. For on neither side were the battle reserves, even when there were any, put into action either for counter-attack or to complete the decision. On both sides, but more especially by the French, fresh troops were simply frittered away in driblets, causing

momentary fluctuation in the fighting line, so that actually the French resistance was broken down when the first line of troops had carried the position before them. But such haphazard leading is not likely to occur again—at any rate, it would be unwise in the extreme to count on it.

The result, however, of an encounter between two armies, both of which retain large reserves, and intend to employ them, will necessarily be that the decision of the fight will, as formerly, be brought about by them, and not by the first fighting line, and it is quite inconceivable how the infantry of these bodies can be employed in any other but close-order formations.

The infantry, therefore, must be trained to meet both requirements—viz., to fight in individual order on one day in the first line, and in close order, perhaps, the next as a reserve; and the difficulty of combining the two contradictory requirements is the present stumbling-block in all armies, though not, I believe, an insuperable one.

Again, none of the writers above mentioned seem to realize either the moral effect actually produced by the artillery in the last war, or the enormous development of its destructive power relatively to that of the infantry which has since taken place.

If the leader of the three arms thoroughly understands his work, the infantry will never be put in until the enemy's resistance has been sufficiently broken to reduce all risk of heavy loss to a minimum. If they are, it follows that the leader failed in that appreciation of the circumstances which is perhaps the greatest of qualities in a general, and the possession of which in a marked degree really constitutes a man a genius.

Of course, such mistakes must often occur, for the number of geniuses available is but small, and in peace-time they have but little opportunity to come to the front; but, as a general rule, it may be taken that the true index to the character and value of a commander is found in the proportion the results obtained bear to the losses suffered in gaining them, and not, as is too frequently believed, exclusively in the butcher's bill of one's own side.

THE PHYSIQUE OF EUROPEAN ARMIES.

A most interesting article to military men is a careful comparison of the relative improvement or deterioration in the physique of the European armies during the last forty years, from the pen of Mr. W. M. Gattie. At first sight, seeing that in all countries recruits on joining are duly weighed and measured, and the results recorded and published, it does not seem difficult to settle the question of relative physique in a few pages; but, unfortunately, the systems by which these measurements are recorded vary so much in method that it is a matter of great difficulty to arrive at a true conclusion, and Mr. Gattie's article runs to the imposing length of twenty pages, each of which is full of interesting facts and observations. Broadly speaking, he considers it to be established that in those countries in which universal service has lasted for a couple of generations, the figures show a marked tendency in the direction of improvement, and that, too, in spite of the drain of life on the battle-fields, which, however, has been very much less than he appears to be aware of. In our own army, not based on universal service, there has been a slight deterioration, though far less than those who talk of the service going to the dogs, etc., would have us believe; but it would seem that the army as a whole is a fair reflex of the classes from which it is recruited, and that actually the stature of the lower classes has been decreasing, and the cause of this decrease he assigns to be the growth of the large towns and manufactures having drained the agricultural communities.

From the last report of the British Army Medical Department it appears that the average height of the recruits finally approved for service is 5 feet 5.8 inches, and average weight 9 stone 2 pounds. According to the French statistics, the average height of the Frenchman at twenty years of age is 5 feet 4 $\frac{1}{2}$ inches, the minimum height for enlistment is 5 feet 0 $\frac{1}{2}$ inch, and the percentage of rejections for insufficient stature has been gradually falling.

In Germany, where the minimum height is 5 feet 1 4-5 inches, the percentage of rejections under the same head has also been falling steadily, and the average height of recruits

passed into the service is 5 feet $5\frac{1}{4}$ inches, with a weight of 9 stone 12 pounds, the average height of the race appearing to be 5 feet $6\frac{3}{4}$ inches; but the measurements from which Mr. Gattie derives this figure seem to us hardly sufficient to warrant this conclusion. We should be inclined to put it lower.

In Austria-Hungary the percentage of rejections is also falling, and the average height of all the diverse nationalities that go to make up the empire, between the ages of twenty to twenty-two, is 5 feet $5\frac{1}{4}$ inches. In Italy the average height of the conscript is 5 feet $4\frac{1}{4}$ inches, and the same decrease in rejections is also noticeable, and the Russian statistics, though less full and scarcely trustworthy, point to similar conclusions.

"It seems then," to quote Mr. Gattie's words, "that, so far as statistics are available, or may be accepted as a guide, there is a general tendency on the Continent towards physical improvement. At any rate, there are no such serious indications in the opposite direction as those which have caused natural disquietude in this country. The fact has to be faced, that while the physique of the English army is deteriorating under influences already considered, the material from which foreign armies are drawn is, on the whole better and more vigorous; and this, be it remembered, has come about in spite of tremendous wars in which every Continental power of the first rank has sacrificed much of the flower of its youth." This improvement he attributes to the healthy effects of the three years' training undergone by every healthy representative of the nations under the colors, and urges that, since we cannot have conscription, it would be as well to introduce some course of physical training into the board school curriculum—which has actually to some extent been already done.

It seems to us, however, that Mr. Gattie has gone rather ahead of his facts. Though as regards Germany, in which country the liability to service has been in force for the last eighty years, it is fair to attribute the universal improvement in physique—which is, we think we may say, universally admitted—to the action of this cause; yet in no other country in Europe has universal liability to service been law long enough to allow of an opinion being formed. The earli-

est children of the first batch of recruits enlisted under the new act can, nowhere except in Italy, have as yet reached the age of twenty. Previous to 1870, conscription with substitutes was the order of the day, and under that system the flower of the race everywhere escaped, whilst the long-service men, and particularly the substitutes, had vices of their own not likely to make them fathers of healthy children. As to the drain of the wars above referred to, from 1815 to July, 1870, though exact statistics, except in the case of Prussia proper, are wanting, it is not possible that the nation lost more than 25,000 possible fathers; and though other countries suffered more severely, still in no case did the death rate assume very alarming proportions.

Though universal liability to service seems to us an unattainable ideal in our own country, still it is interesting to note where we would stand in the scale if we had it. The British Association fixes the average stature of the typical Englishman at 5 feet $7\frac{1}{2}$ inches, with chest girth of $36\frac{1}{2}$ inches and weight of 10 stone 10 pounds; and since this is the average of men who have never undergone any exceptional cultivation of their physique, it seems only reasonable to suppose that an army recruited only from the best men, and able to afford a percentage of rejections for physical unfitness higher than any other country can do, would be able to improve very markedly on their figures, which even by themselves show us to be normally a considerably taller and broader set of men than any others on the Continent. There is, therefore, no real ground for the pessimism which most readers of Mr. Gattie's article are likely to carry away with them.

THE WEAPON OR THE MAN.

In the history of the 2d "Leib" Hussar Regiment of the Prussian army in the war of 1870, I have come across a curious instance of the absurdity of basing tactics or formations primarily on the nature of the weapon, and not on that of the man who handles it. This regiment formed part of the 4th Cavalry Division, and at the end of September formed the extreme advance of the army then engaged in investing Paris. Its nearest cavalry supports lay some three marches in its

rear, the infantry still further, and in its front the first Army of the Loire was gathering round and about Orleans. As the enemy developed more and more enterprise, two battalions of Bavarian infantry were detached to its support; otherwise it had to rely on its own resources, and even these supporters had to be extended over an exceedingly wide front; so much so that, when on the morning of the 5th October its outposts were driven in by a brisk attack of the enemy, it could only muster 1 battalion of infantry, 10 horse artillery guns, and 2 brigades of cavalry, but the actual fighting only fell on one of these two brigades. Against a hostile force of 12 battalions, 12 squadrons, and 18 guns, amongst which were several African battalions and some other regular troops, including all the cavalry, it held its own for three hours, then quietly withdrew for a couple of miles, and after having been under the fire of all three batteries and of dense swarms of skirmishers on a plain which afforded practically no cover whatever, its losses for the day amounted to only 5 wounded and 19 missing, 4 horses killed and 6 wounded. The number of missing is accounted for by the fact that a Bavarian infantry picket was surprised in the night and mostly captured. The method of fighting adopted is of interest, for it does not often happen that cavalry alone is called on to face such overwhelming odds. The site of the action was a gently sloping plain, falling towards the Prussians. Their right rested on ^{the} village of Boissay, occupied by a company of Bavarians, and next to it stood the guns and their escort of one squadron, mostly thrown out as skirmishers well to the flank. In rear of the center, the village of Foury on the Orleans road was held by two more companies of Bavarians, and their fourth company held a small house on the railway embankment which ran north and south, parallel with the road, and between which and Boissay, on a front of some 2,000 yards, the line was held only by cavalry skirmishers; beyond the railway the line was continued by more skirmishers backed by two closed squadrons. The French infantry fired away as hard as they could, and made numerous forward movements, whilst the guns on both sides indulged in an artillery duel, the French, however, sending a few shells at the closed squadrons in rear,

one of which accounted for three-fifths of the total loss. The method of fighting was the old-fashioned one for cavalry skirmishers—viz., riding in circles, individually firing their carbines from time to time, and behind them the closed squadrons kept on the move to distract the enemy's aim. As for armament, the Prussian needle-gun carbine was a perfect beast of a weapon, short, clumsy, and certainly not capable of accurate fire at 400 yards range. The French, both cavalry and infantry, were armed throughout with chassepôts, abundantly supplied with ammunition, with which they kept up a fire over the whole ground in their front up to a distance of over 2,000 yards. At one moment they began to come too close up to the gunners, when a troop of the escort and a few skirmishers charged the advancing swarm and rolled them completely up, and the attempt was not renewed for about an hour. On the other flank the skirmishers, finding the French could not hit them, grew bolder and bolder, and galloped close up to them, actually succeeding in forcing them back for somelittle distance, and bagging several of them. To drive them off, six squadrons of cavalry were brought up, but the Hussars wanted no better chance, and with the three squadrons at hand prepared to charge them; but the French halted, wheeled about, and retired, and the Prussians in turn had to go back under a heavy fire, by which, however, only one horse was slightly grazed just enough to draw blood.

Now these French troops were fresh, well fed and equipped, and contained some excellent material and devoted officers. They were certainly very far removed from the condition of utter mental and bodily prostration to which in process of time even the best troops may be ultimately reduced. Yet, as we have seen, they could hit nothing at all, and even if we assume the present repeater to be double as effective as the chassepôt—which is hardly the case—and double the losses accordingly, the result is still ludicrously small. No doubt against attacking infantry they would have made a better show, as these present necessarily a more stationary target, but even in that case it is impossible to believe that it would have made much difference whether the attacking troops had stood two deep or four deep, or one pace apart or three. But the whole essence of leading lies in not committing either

infantry or cavalry, till the artillery fire has induced an equal, if not a greater, degree of prostration in the enemy. Where circumstances press for a decision, and since in any case it is never possible to make certain of your adversary's condition, then, as a principle for all decisive attacks, march to meet him with your leading troops in such a formation that they can at any moment develop their utmost man-killing power, and those in rear in whatever sized column or line best suits either the ground or their state of discipline, but never let fear of the enemy's bullets influence your choice. This would give us, according to the quality of the troops, either single rank with elbow-room or ordinary two-deep line for the leading troops, and line or company column for the rearward ones.

But to expose the hopelessness of the position adopted by the official British school—i. e., those whose duty it is to train the future staff and leaders—let me here adduce in comparison the fire-power possessed by the good old Brown Bess of former days. It will be readily granted that when there were no sights to be fumbled with, and firing was all done at point-blank ranges, its effect was likely to be much greater than nowadays, when to open at 1,000 yards and forget to put down the sights as the enemy advances, destroys all hope of hits on the foremost fighting line, the one on which the decision depends. But the actual number of bullets delivered per yard run of the usual formations in those bygone days was at least as great as that delivered in the same time by the extended lines and weapons in use in the Franco-German war. There were two forms of fire then employed. In the first the troops standing four deep (this was about 1730) formed eight deep as we now form fours. There was thus a man's breadth between the files. The leading file fired and countermarched through the interval; No. 2 stepped up and delivered his fire, and followed No. 1, and so on throughout the file; and in this way the rapidity of fire was brought up to 12 and even 16 rounds per yard run of front.

The other method, which was principally developed by Frederick, and was a consequence of the iron ramrods, was half-company volleys three deep, five and even six to the minute, which gave something over 15 rounds per minute,

since the space allowed in the ranks was only 22 inches. It is only fair to add that this fire left much to be desired on the score of accuracy; but in this respect it could never be as bad as it is at present, for, after all, the bullets fell with man-killing force somewhere within an area 500 yards deep at the outside, instead of within one of 2,500 or more, as with the chassepôts. The muskets also in Prussia were purposely made heavy at the muzzle to keep them down, and special precautions were made to train the men mechanically to keep their muzzles low.

But at all times since the days of Marlborough, the fire-power of the line, when that line consisted of steady troops, has been sufficient to mow down their opponents with one single volley. The problem has always been, on the one hand, to keep the men steady; on the other, to insure that the enemy was not steady at the moment of attack. This must not be understood as a pleading for the old weapons back again; such a thing would be ridiculous, for the first and greatest object to be kept before one is, that the soldier should have confidence that he is as well if not better armed than his antagonist, the point again being, not the nature of the weapon in itself, but its effect on the mental condition of the man.

Bearing the above in mind, it is interesting to contrast the conduct of the 4th Cavalry Division on this occasion with that of our own 15th Hussars and other Prussian and Austrian squadrons in 1792-93 under somewhat similar circumstances. On the 17th September, 1792, some 1,500 Prussian Hussars with horse artillery guns charged and routed some 10,000 French troops under General Chazot, and at Villiers en Couche, on 24th April of the following year, 86 Austrians and 200 sabers of the British 15th Hussars, then Light Dragoons, broke 10,000 French with artillery who stood to receive them in an immense square. They killed 900, captured 400, and brought in 5 guns. At Cateau Cambresis, two days subsequently, an Austrian regiment and 9 squadrons of British cavalry broke and dispersed a French corps of 27,000 infantry, destroying some 3,000 and capturing 22 guns, and in a second charge the same day, made by four British and two Austrian squadrons, another column was defeated with a

loss of 1,000 men and 10 guns, the total loss for the cavalry on the day being 16 officers and 380 men; and it must be remembered there is strong reason for supposing that the *moral* of these troops thus beaten was of a higher order than that of the French in 1870. Many other instances might be quoted, Rossbach amongst others. But I cannot help belieyng that if in 1870 the spirit of the Prussian cavalry has not been broken by the constant iteration of the "cavalry cannot charge unshaken infantry" and the exaggerated reports as to the power of the new weapons, they would have gone for the whole French division before them on this day and exterminated them with a loss on their side which would certainly not have exceeded that of ourselves and the Austrians alluded to. Of course the duty of the 4th Cavalry Division was to see, and not to fight, but compare the moral advantages that such a success would have entailed. As it was, the French reported a victory, magnified the weak Bavarian battalion by 10, did the same for the guns and cavalry, and thus succeeded in raising the spirits of their new levies behind enormously, whereas a dashing charge would have served the purpose of the Intelligence Staff as well, or even better, and have established such a terror that the French would never have ventured into the open again, and all the fighting round Artenay, Coulmiers, Beaujency, etc., with the heavy losses it entailed, have been spared on both sides. As it was, one single charge, made by a troop of only say 25 to 30 sabers, sufficed to roll up a whole line of skirmishers and keep them quiet for a couple of hours. What might not have been expected from the attack of eight or twelve squadrons appearing suddenly on the French rear? And there was no reason why they should not have availed themselves of their superior mobility to troll right round the enemy, and thus cut him off from all support, for the ground actually favored such an operation. But, with the exception of the 1st Guard Dragoons, enterprise on the battle-field was not a sin to be laid to the charge of the Prussian cavalry.

In the above-mentioned book an attempt has been made to present in tabular form the performances, losses, and aver-

age work and endurance of the horses during the campaign of 1870, and in spite of the dreariness of the figures, the data thus afforded should be of such value as a standard for cavalry officers and the staffs of higher commands generally that I venture to submit them to my readers.

The regiment was present on the field during the following general actions, some of which lasted for two days,—viz., Wörth, Beaumont, Sedan, the two battles round Orleans, and at Le Mans,—and, including minor engagements, its detachments crossed swords with the enemy on 71 days, on 12 of which it came under artillery fire.

Its total losses were: killed 1 officer and 19 men, wounded 2 officers, and 23 men missing, captured by the enemy 4 officers and 47 men, and died of sickness 1 officer and 29 men. Of horses it lost 37 killed, 38 wounded, 51 missing, and 138 broke down and had to be destroyed. The average strength of the squadrons throughout the campaign was maintained at 96 sabers and the marching-out strength 114. It captured 1 gun, 34 ammunition and other wagons, 9,016 prisoners, and 111 horses. In all it marched 2,072 miles, its average per marching day being 17 miles. The longest day's march for the whole regiment was 41 miles, for a single squadron 54 miles and for a patrol 104 miles. The average for the regiment of hours under saddle daily was 9.5, the longest time without unsaddling was 76 hours, and the total number of rounds unaccounted for—i. e., expended—was 4,080, of which only about 53 per cent were actually fired in action. Unfortunately, there is no means of estimating the losses it inflicted on the enemy during the whole campaign, but since they more than once broke up bands of Franc-tireurs, and gave no quarter, the total amount must have been considerable; and as regards their own somewhat high figure of "missing," this is accounted for by the loss of a very strong officer's patrol, which was left behind and forgotten by the army, and being forced to take shelter in an old castle by bands of armed inhabitants and National Guards, was eventually forced to surrender.

As to the endurance of the horses, the following point deserves to be noticed. After the first few weeks of the cam-

paign, thanks to the abundant food and constant exercise, they actually improved in condition, and whereas at first several cases of sores on the withers occurred, indicating falling off in condition, none were registered in the latter months, but several were noted under the rear half of the right fan of the saddle; but the curious thing is that the carbine was not carried as with us, but in the so-called Namaqua bucket in front of the right thigh, so that the usual explanation for a sore in this position will not apply. Altogether, 186 cases of sore back were reported in the whole six-months campaign, or 33 per cent of all the horses, but only 9 per cent had to be specially treated; the others were ridden throughout, their cases being met by altering the folding of the blanket; 56 per cent of all the horses went through the campaign without a day's sickness, and 72 per cent of the East Prussians, but the general average was brought down by the horses under 7 years old, and the few horses bought or captured in the country, many of whom, particularly those with a Percheron strain, had to be destroyed for fever in the feet. There were further, 17 cases of debility, 25 of colic, and 7 horses were burnt to death by a fire breaking out in their stable.

Only 25 per cent of the 5-year-olds stood the work, and the best lot were those rising 11 years, of whom 76 per cent went through the whole six months without trouble, and even the oldest horses of 18 years and upwards bore the work well. There were actually two of 22 years of age, one of whom was killed in action, but the other, though ridden by one of the boldest scouts in the regiment, never went sick for a day.

MINOR TACTICAL DAY AT ALDERSHOT.

For some years past it has been the custom to devote a day each week to exercising the commanding officers and senior field officers in the management of a small body of their own or of all three arms according to their seniority and skill. As I first remember them, there used to be a good deal of farce about them, but of late, especially under Sir

Evelyn Wood, they have come to be very searching examinations for the officer in command, indeed affording very considerable scope for the display of soldierly talent, and for the nervous and inefficient even better opportunities for them to convict themselves of worthlessness. Perhaps a detail description of one of these days will prove of interest to my readers, seeing that one by one all officers of British regiments may expect to come under the same harrow.

On the 2d of June a force consisting of the 19th Hussars and a battery of Royal Horse Artillery was ordered to parade at Government House at 8:30 a. m., under the command of the senior major of the regiment. Here it was met by Sir Evelyn Wood and the staff, the latter augmented for the day by some 30 field officers to act as umpires, and a number of orderly officers, and the whole were then taken out at a trot some miles into the country, where they were halted, and the scheme for the day's work first issued. The opposing force had been moved off with the same ignorance of its destination in another direction. I had attached myself to the Hussars and Horse Artillery. We halted just south of the village of Cove, and under cover of the embankment of the main line, Southwestern Railway—i. e., Basingstoke, Farnborough. Here the general and special ideas were issued, and on them the officer in command of the detachment had to issue his orders. The general idea ran as follows: "A flanking column of an invading army hearing, when bivouacked near Farnborough, that its main body has been defeated and is falling back, retires to the southward, and is followed by a cavalry force moving from Reading." And the special idea for the Northern or Red force ran, as near as I can recall it: "The enemy is retiring, under cover of a line of outposts, along the canal. A large magazine is said to exist about a mile south of the Queen's Pavilion. Break through, find out what is going on, and capture the magazine." Actually the line of outposts ran from the gas works bridge close to the Southwestern Aldershot Branch, to Pond-tail bridge to the westward; whether this information was given I forget, but, in any case, the other crossings beyond the above limits were too far distant to come within the

scope of the day's work. The canal throughout was considered as unfordable, though, as a fact, one can ride through it anywhere.

The country round Aldershot is so generally known in the service that much description of it is unnecessary. The ground we were to operate over is traversed from north to south by the Bagshot-Farnham road, and from east to west by the canal, over which there are in all six bridges—viz., the gas works on the east, the iron bridge in the south camp, Aldershot wharf bridge on the main road, Eelmoor bridge a mile to the westward, Norris Hill bridge crossing the canal, which here runs in a deep cutting at a height of some 20 feet above the water level, and finally Pondtail bridge, about three miles west of the main road. East of the Bagshot road the conditions for the movement of mounted troops are so unfavorable that practically that side of the ground may be left out of account, and all interest centered on the wharf bridge and to the westward. The wharf bridge can be approached under cover to within a few yards; on the other hand, being on the main road, it was the most likely to be best prepared for defence. Eelmoor bridge is in a re-entering angle as regards the enemy, and its approaches offer very little cover. Norris Hill bridge can be reached with a minimum of exposure, for a big wood comes right down to the canal, completely hiding all movements, but at the sametime the length of the bridge and the depth of the cutting render it very easy to defend; and last of all, Pondtail bridge is about equally bad for attack or defence, and is so far off the main objective that one would only choose it as a last resort.

How the matter actually presented itself to the commanding officer I have, of course, no means of knowing, but to me it appeared somewhat in the following manner: The enemy is beaten and in retreat. How much beaten the indications along the road we are supposed to come would have enabled me to judge. My best chance is to press him hard, and, if possible, seize a bridge before he has thought of barreling it. The ground east of the road is, from the map, decidedly unfavorable; and would, moreover, lead to too great a dispersion of my force. I will therefore send two troops (we were working with four per squadron) to each of

the bridges westward of the main road and including the latter, as fast as they can travel, and with the remaining two squadrons form up in readiness under cover at the north end of Cove Common, that being the point from which all the roads radiate. As regards the artillery, two guns are enough to demolish any average barricade, therefore two shall go down the main road, two shall take Eelmoor bridge under fire from the ridge which divides Cove Common (range about 1,200 yards), and two shall go with the machine-gun to the high ground north of Morris bridge, from whence they can either take Pondtail in reverse, or, if necessary, be used at short range to blow in the barricade which we may expect to find at Norris bridge. With average luck, we ought to rush one if not two of the four, and in any case the enemy's attention will be distracted all round, and the reports I receive will enable me to judge against which to mass the bulk of my force.

Probably on service the officer in command would have acted in this manner, but umpires are more difficult to deal with than an enemy, and this scheme is a little too unorthodox to risk one's peace-time reputation on, though, as far as I can judge, the chief umpire, Sir Evelyn Wood, would have appreciated it. What actually happened was that small officers' patrols were sent to each bridge, and Norris bridge only was honored with a whole troop, the main body and guns being drawn up in readiness at the north end of Cove Common. I rode with the scouts up to the wharf bridge, and could only admire the way they worked; no reasonable fault could be found with them, and they were keen and took an interest in what they were doing. But some of the distances were considerable, and nearly an hour and a half elapsed before all the reports were in, and the main body began to move in the direction of Norris bridge.

Personally I stuck to the umpire staff, which proceeded to gallop across the plain towards Eelmoor, the general far in advance and the remainder spread out anywhere, according to the speed of their horses. We were a large body, but presented no conceivable resemblance to a formed body of troops. Nevertheless, the enemy mistook us for cavalry, and at about 600 yards opened a heavy fire on us, from which, how-

ever, had we really been a squadron, we could have got ample shelter behind a low undulation that ran out from the canal about 250 yards in front of the bridge. Part of the picket had been very well placed in a small copse which gutted out of the bank on our side of the bridge, and its support was under cover close at hand, where they were entirely safe from mounted men; nevertheless they were so flurried by our approach that at the critical moment, when we were within 150 yards or so of them, they bolted out of the copse across the bridge and left it completely open to us, running away up the slope beyond in no sort of order or formation. There was a very young officer in command, who nobly stuck to his post, and who, on being asked for an explanation, said we had been taken for cavalry. He had orders to hold out as long as his ammunition lasted; that had been expended, and so he had fallen back. Poor young chap! he was the victim of circumstances. Yet, if Sandhurst education were not a farce, he ought to have known better than this. But one hardly knows what to say of the officer in command of the support for not hurrying up and telling him of his mistake, for had he been alert he must have seen it, and the support was not 200 yards distant. As for the men, I never saw such a disorderly mob in my life; they straggled away by twos and threes in no kind of order, and finally stood about on the top of the hill like so many yokels at a country chase.

However, having heard the explanation, we cantered on to Norris bridge, and here I elected to stay, expecting always the chief blow to be delivered here. When I arrived the state of affairs was as follows: The bridge was held by a company of the Scottish Rifles, who had arrived on the spot simultaneously with the Hussar troops. No umpire being present, the two officers had met amicably and had agreed to differ. The infantry man declined to give way, and under the circumstances the cavalry man could not charge over his body. So he dismounted a portion of his men, and the two sides exchanged a lively fire. The trees here are well grown and come close up to the edge of the cutting, which is lined on both sides by banks, giving excellent cover. The road, after crossing the bridge, runs straight for about 30 yards

on the cavalry side, and then bends sharp round to the eastward; and on it there is room to form a whole regiment under cover. To the westward there is a clearing up to the edge of the high ground, affording ample room for a battery facing towards Pondtail, and the fringe of trees bordering the canal is sufficiently thick to shelter any troops on the clearing from fire from the south bank of the canal. A track coming from the north runs into the main road across the bridge just at the above-mentioned corner of the main road, and affords access to the clearing.

We had hardly been at the bridge for more than a few minutes when we heard a battery galloping down this track. The leading gun just came in sight for a moment, and then wheeled sharp to its right to come into position, against Pondtail. In turning it was under fire of the infantry for perhaps 10 seconds, and would probably at that short range, barely 50 yards, have lost half its team. It was put out of action by the umpire, and I think rightly. But the remaining five were not seen at all, and came into action taking Pondtail in reverse at most effective range. This bridge, I may mention, stands up well above the plain, and would not have been tenable for five minutes; the line of retreat of the infantry was also completely exposed. For the moment the position of the artillery seemed almost ridiculous, for here they were firing due west, whilst immediately to the north and not 100 yards distant a company of infantry was firing into their left rear, but on dismounting, and looking along the rifle barrels, we found that the aforesaid screen of trees was actually dense enough to stop all but a chance bullet, so it was decided that the guns could remain in action. Meanwhile we were unaware that the officer commanding the detachment had changed his plan, and was actually moving with the bulk of his force on Pondtail, reinforcing the troop at Norris bridge only with the remainder of its squadron. We had seen this reinforcement come up, but in the wood could not estimate its strength, and were every moment expecting a couple of guns to be turned on the barricade, which was indicated by some bits of furze, and then a rush to be made, either by the dismounted men, who now appeared to outnumber the very weak company, or by the

leading squadron mounted, down the road, either course seeming feasible. The cavalry then sent a messenger to the umpire to know whether the barricade the infantry claimed to have made could be considered "jumpable" or not, and pointed out that both sides had arrived simultaneously, and he had had the road under fire ever since. The infantry, on the other hand, claimed to have cut down some fairly big trees on either side of the road and to have entangled them. So they were asked to produce their tools, and then it turned out that they had nothing but their sword bayonets, the little 10-inch things they now carry, and they were asked to show how they could chop down the trees without exposing themselves, and it was found they could not do so, so the point was given against them. We then remained momentarily expecting the rush, which, however, did not come, and then, it being 12 noon and the infantry having orders to retire at that hour, their officer drew off his little command in the neatest possible manner without showing a hand, and only just in time, for meanwhile Pondtail had been forced, and the cavalry patrols were already appearing on his flank. The bridge now lay completely open, and still there was no movement on the part of the cavalry. The situation was too ridiculous, but exceedingly real. Fully ten minutes must have elapsed before they began to suspect anything, and then probably it was the movement of the spectators which awoke suspicion. Then at last half a dozen scouts dashed over the bridge, and began to examine the coverts, and their astonished faces, when they found no enemy even within sight, were a most amusing study.

Meanwhile Pondtail bridge had been carried, I learnt afterwards, in good style, with little exposure and much dash, and the infantry were retreating towards Cocked Hat Wood, over a stretch of marshy ground, dry enough for them to pass, but impracticable for cavalry. Having crossed it, they turned and opened fire on the leading squadron, which attempted to follow over the same ground, but with no ground scouts. They were just on the edge of the bog, and in another moment would have been hopelessly in it, when the infantry, armed with magazine rifles and all the latest improvements, turned tail suddenly and ran, and the chief um-

pire at once put them out of action. The remainder of the regiment stuck to the road leading to the steeplechase course, trying to get right round the infantry and cut them off.

The squadron at Norris bridge had now come across, and with it the battery. The latter came into action on the southern edge of the Norris Hill plateau, directing their fire on the retreating infantry, who were seeking to gain the cover of the copses which border the Long Valley. But the enemy's gunners had also been on the lookout, and the moment our battery appeared, they opened on them with shrapnel from Jubilee Hill, and at a known range, and in all probability would have wiped out our guns before they could come into action. At this period, I regret to say, the squadron immediately on the spot departed from its cavalry traditions, and adopted the rôle of mounted infantry, pursuing only with fire; and this was all the more blameworthy, for the infantry in front of them seemed completely out of hand. However, they kept driving them back straight up towards Chestnut Copse and west of Long Hill. At the same time the main body of the Hussars appeared on the two hills in the center of the course, known respectively as Tweedledee and Tweedledum, converging also on the western edge of Chestnut Copse, into which a couple of companies of infantry had thrown themselves. The ground in front was extremely difficult for the cavalry, as a stream comes down from the northwest edge of the copse and is passable only at three bridges, broad enough for perhaps a front of fours. Accordingly they dismounted, and for a few minutes a fine fight raged. It seemed to me that here they lost a great opportunity. It was impossible to charge the western edge of the copse, for, apart from the difficulty of breaking into the wood itself, the steeplechase course here runs in a 10-foot cutting right across the front of it; it was equally impossible for the infantry to break out for any offensive movement worth speaking of, for they were too few in number, and the edge of the wood was under the fire of the Hussars' machine-gun, which was cleverly posted and not liable to distant artillery fire. Under these circumstances, it would have been best not to dismount at all, but to move along the reverse slope of Tweedledee, and crossing the stream by one of the bridges, join the

detached squadron, now rapidly coming up in a concentric attack on the retreating right wing of the enemy, and then follow on into the Long Valley, towards the supposed magazine at the Pavilion. What did happen, however, was this: After a few minutes' dismounted fire, the main body of the regiment mounted, and tried to charge Chestnut Copse, but only about a squadron found sufficient room, the others being crowded out towards the stream and a good deal delayed; but the one squadron which did charge forgot again to send out ground scouts, and had to pull up on the edge of the steeplechase cutting under a crushing fire at 100 yards range and cross it singly as best they could; they must have been utterly annihilated. The detached squadron, having missed half a dozen chances of mopping up the infantry of the right wing, and having allowed them to get into reasonable position, eventually decided to charge, and, having not more than 300 yards of open to cross, would probably have succeeded very well, as they had only some 80 rifles to face, for the remainder could not be brought to bear on them, and just as they had halted, the two squadrons of the center which had been delayed also charged into the mêlée. The cavalry would have succeeded beyond a doubt, but at least a whole squadron would have been sacrificed, and this was also the chief umpire's view. However, the day was not over yet. There yet remained the right wing of the infantry and the battery to beat, and the officer commanding the detachment received orders to go on with three squadrons and do the best he could. The problem was a very difficult one, for the enemy held a very strong position on Jubilee Hill, and apparently there was not a scrap of cover for the cavalry across the whole of the valley. But looking forward where they were drawn up, one could see that the shoulder of the hill projected beyond their alignment on their right, and if this could be gained the last four hundred yards of the advance would be made in a dead angle, but to gain it the whole of the Long Valley had to be crossed.

The horse battery, which had meanwhile trotted up, came into action on the neck of Long Hill between Chestnut Copse and Cocked Hat Wood, and the regiment moved off to the left under cover of the ridge. Presently they emerged

from behind the wood in column of troops, and, galloping, wheeled into line and advanced a short distance, then wheeled into half-column to gain the shelter of the above-mentioned shoulder, then into line again and delivered their charge. I rode in the rear rank for the last half-mile, and noted that the guns could not see us at all, and we could only see a few of the white helmets of the infantry, till we came over the brow not 150 yards away from them. It was the sort of charge that cannot be decided about in peace; it might or might not have succeeded. In the first place, it would be exceedingly likely that, under the strain of the artillery fire on their front, the appearance of the cavalry from behind Cocked Hat Wood might have passed unnoticed, and, at any rate, the guns could not have changed front right back with sufficient rapidity, and whether the infantry saw them or not, the flank movement across the valley was made at too long a range and they moved too fast for fire to have had much effect. Further, the infantry were by supposition part of a beaten force, and had just seen half a battalion of their own side wiped out, and, finally, the infantry actually were so flurried that they forgot to put down their sights, all of which points were brought out by the umpires in their reports to Sir Evelyn.

But nothing throughout the day struck me more than the improvement in the umpiring, and particularly the fairness and thoroughness of the chief umpire (Sir Evelyn). As an instance, I would quote what occurred at the charge of the left squadron on the infantry outside of Chestnut Copse. When Sir Evelyn arrived, two companies of infantry were on the edge of the ridge, against which the cavalry had advanced one squadron only; the other two were still crossing the stream in the hollow. The infantry claimed to have outnumbered the cavalry, but Sir Evelyn pointed out that, in the first place, one company was not facing the direction from which the cavalry had come at all, and, in the second, that he had himself noted the company doubling up the slope of the hill at the instant the cavalry halted. Then he turned to the other company, and asked how many rounds they had fired, and they promptly answered "Five." However, he proceeded to cross-examine them, and called attention to the

empty cartridge-cases at their feet, and brought the figure down to two. As the company was about 60 strong, this gave about 120 bullets delivered, and he cannot be considered as over-biased in favor of the cavalry, for he assigned them a loss of 20 horses, which would be remarkably good shooting for broken troops on the battle-field. Ten years ago the cavalry would have been put out of action on the spot without a moment's hesitation, and they have good reason to be thankful for the progress thus far made; but the harm done then is still very evident, for half the officers are permanently "funked" by the umpires, and thus a half-hearted, dawdling style of work results, which, by leaving the troops exposed to fire ten times longer than is necessary, would lead to far heavier losses in the long run. Only a few days before, with another regiment at a similar day, we had an instance of this. An outpost screen had also to be broken through, and this time the line was so weak in itself, and so badly taken up, that the whole regiment might have dashed through some copses without incurring the fire of more than a dozen rifles, and that only momentarily as they moved from cover to cover. Instead of doing so, whole squadrons were dismounted to skirmish with them, and ample time thus afforded to the enemy to bring up his supporters, which, however, he neglected to do.

Really to appreciate all that has been done, it is necessary to recall the state of things that existed some seven or eight years ago; and I have one recollection by me that as yet I have never put on paper. It was the occasion of a grand rehearsal for a prince, of a divisional day. A northern army, represented by the whole of the division, was to attack a skeleton enemy furnished by the Royal Engineers, the depot battery, Royal Horse Artillery, and a squadron of the 4th Dragoon Guards, who were to take up a position across the spurs of Caesar's Camp from the Pavilion to Outriden Copse, an annex of Chestnut Copse, so often mentioned above. Things were already so far improved that the exact position to be taken up was left to the enemy, and had to be reconnoitered and fixed by the cavalry first; and the skeletons made clever use of the slight latitude allowed them, and took up their ground remarkably

skillfully, not a man being visible from the front. But even before the day began, treachery of a very base description was at work. A class of Army Signallers, who had nothing to do with the operations, took up their stand on Hungry Hill, from whence they could see into our position in reverse, and began signalling all our detail arrangements over our heads to confederates in the attacking force. But they had reckoned without their hosts. A sergeant of the telegraph troop, happening to look that way, read some of their messages, and reported them to one of his officers, who, taking with him some half-dozen of his mounted men, stalked the party most skillfully, and made them all prisoners, and, taking their flags, signalled on his own account that we had entirely changed our front. This somewhat flabbergasted the enemy, and the cavalry really had to clear up the matter themselves. For this purpose the whole cavalry brigade left the shelter of the copses near the club-house, and trotted up in line of quarter-column of squadrons at close interval, with half a dozen fighting patrols out on their front and flank, but not more than 100 yards distant from their main body. In this order they trotted slowly towards us, and halted not 500 yards from our line, of which they could see nothing at all. Meanwhile our squadron of 4th Dragoon Guards on our left had been stalking them most skillfully down a hollow, and had arrived well on their flank, and then wheeling into line, charged straight at them, catching them at the halt. The brigadier rode up to the squadron leader perfectly furious, and asked him, so the story went, what the devil he meant by charging him at the halt. To which the officer replied by reminding him that only a few days before the general had quoted Frederick the Great's remark that "any officer who allowed himself to be attacked at the halt should be immediately cashiered." This so annoyed the general that he sounded "troops about," and trotted back with his whole command to where he came from. A long interval now ensued, during which the staff, we were afterwards told, endeavored to induce him to go back and try again. At length they succeeded in mollifying him, and the brigade again appeared, this time with their flank a little better protected. But again, when they reached the same spot, they

halted, and for some never-explained reason the regiments wheeled to their right, and began to proceed at a walk along our front, and as they did so, we opened fire on them at barely 400 yards range. This was too much for them, and they broke into a trot, and then into a gallop, pursued by volley after volley. As they crossed the Long Valley, a squadron of mounted drivers of the Royal Engineers troops issued out on their flank, and pursued them with yells of derision over Long Hill and out of sight. What became of them afterwards we never knew.

As for the rest of the day, there was nothing particularly remarkable about it, and need not be dwelt on further, my only object being to afford some standard by which to judge the progress the cavalry have made. Much, very much, yet remains to be done, but at present there is no reason to fear that things can ever relapse into their former condition. Our system is yet far from perfect, but, in spite of its faults, it is working in the right direction, and if once we could get down to the root of the matter, and by the adoption of the company and squadron system train our young officers more as practical men than as mere theoreticians, our progress would be ten times more rapid. Such as it is, however, we owe it to book teaching, and cannot therefore be surprised if our progress is slow, but once let practice and theory go hand in hand, and the strides we should make would, I firmly believe, render us soon a match for the best troops in the world, for, I repeat it again, our raw material, whether for men or officers, is superior in innate quickness and intelligence for war to any in Europe.

For fear, however, lest we should grow too confident from the above comparison, I will add first one incident to show what a Prussian crack regiment can yet do, and one, I fancy, it will be hard to beat. Two French officers of cavalry went over to Germany to see how things were looking, and were sent down to the 13th Uhlans, then commanded by Von Rosenberg, the most perfect horseman and horsemaster in the army, to have their eyes opened. They were taken down to a bridge leading over a railway which here crossed the plain. To the south of them and some 600 yards distant lay a dense pine wood. To the north a skeleton enemy was

seen approaching. A couple of scouts stood on or near the railway, which here ran on an embankment enclosed by two fair post-and-rails, the drop to the northward being much the most considerable, about 30 feet. The scouts signalled the approach of the enemy, and suddenly out of the wood emerged Von Rosenberg with a couple of his squadrons, cantered across the intervening space, jumped the first post-and-rails, clambered up on the embankment, slithered (excuse the expression) down the other side and took the second obstacle, and then, after a moment's check to steady his men, delivered his charge within 250 yards of the last-mentioned fence. And the Frenchmen rode home sadder and wiser men. I once saw the King's Dragoon Guards cross a cutting of the Grand Trunk Road near Lawrencepore station under almost equally difficult conditions, but I should like to see a few more such instances before I become too cock-a-hoop, and I confess the 19th Hussars have rather inclined me that way.

VOLUNTEER FIELD DAY AT ALDERSHOT.

A combined field day of Regulars and Volunteers took place in the Long Valley on Wednesday last. The total number of men on parade must have been nearly 12,000 rifles, 800 sabers, and 9 batteries, and for these the ground was all too small, so that numerous apparent mistakes may be written off at once, as not due to the fault of any one in particular. There was no particular strategic idea. The defenders occupied the line of Long Hill, Bourley, with strong advanced posts and artillery, and had prepared behind—i. e., to the westward—a strong entrenched position on the slope of Tweedledee and Tweedledum, the left flank resting on the North Horns, and against them the assailants advanced concentrically, the bulk of their forces in the center and right.

When I reached the ground, I found the fight in progress. On the slopes south of the Pavilion, the attacking artillery was in action; and their first line of infantry had reached the crest of Eelmoor plateau, overlooking the Long Valley and extending in a semicircle along the edge of the broken ground as far as Miles Hill. The atmospheric conditions were very singular, not foggy, but a singular haze made the

movement of troops, especially those in gray or red, almost invisible at a distance of a few hundred yards, and hence I can only speak, of what happened within a narrow limit around me. As I rode up to the fighting line, which was pretty dense, about a man to the pace, they were exchanging volleys with the defenders in Cocked Hat Wood and on Long Hill. The fire was fairly controlled, and the volleys fell fairly round—range, but not direction, being given by the officers. The actual distance to the enemy was only 400 yards, but the order was, as far down the line as I could hear, invariably "at 800 yards," etc., but as the men did not adjust their sights, probably this would not have signified; yet a very simple rule exists for ascertaining the range at this distance approximately—viz., that at 400 yards the fore-sight of the Martini Henry, when looked at from the shoulder, exactly covers the height of an average man, but no one appeared aware of it. The supports were moving up in extended files, though out of sight of the enemy, and presently halted and knelt down about 300 yards in rear. I may mention that the plateau falls eastward, away from the enemy, just about parallel with the trajectory of the rifle at this range, and consequently would have been swept by a hail of shot against which nothing could live in actual practice, yet there was excellent cover for all within the limit of my sight not 150 yards further to the rear. Further back on my way up I had seen the woods about the Pavilion crammed with reserves, and further to the right I could see the white helmets, but not the bodies, of a whole regiment enfilading the position of the defenders, who showed a reckless courage in exposing themselves to our fire. Presently, to save ammunition probably, the firing on our side ceased, while the guns away on the high ground to the south continued their work of preparation. The fighting line about where I stood was entirely composed of Volunteers, and these lay and lolled about on the ground without any semblance of discipline whatever; most of them laid their rifles on the ground, and, with their backs turned to the enemy, refreshed themselves, mostly with unwholesome-looking apples.

At length, after a weary wait, during which I was every minute getting more and more disgusted with our much-

vaunted citizen soldiery, the advance was ordered, and the whole line rose and moved down into the valley, followed by supports and a second line, which was also in extended order of some kind. Thanks to the conformation of the ground, about 200 yards further would have carried them into a dead angle, in which they could have collected in numbers and then rushed the opposite hill—but instead, on reaching the foot of the slope, they commenced an advance by rushes, firing again; and then ensued a scene of disorder worse than anything I have ever witnessed. Notwithstanding that the enemy had already given up their position, the men fired all they could, I am bound to admit, in an approach to volleys—the idea was evidently there, but the execution lacked finish. The small echelons rushing forward lost their direction, and the rear fired into them, the machine-guns dragged by men seriously hampered and delayed the movement, causing the line to assume a still more irregular appearance, and the following line assumed the most extraordinary shapes, so that at length the whole looked like two flattened-out W's, touching each other at the apices, with supports dotted in between. Two companies immediately at my feet, in second line, wheeled up, and threw themselves into a shallow *nullah*, facing so that, had they fired, they would have enflamed both first and second line for about 800 yards; fortunately, they did not put in the last touch, by actually doing so. All this, of course, took time—perhaps ten minutes in place of two, all that was necessary—which, however, as no enemy was in sight, was not of much consequence. At length they reached the crest of the hill and the further edges of the adjacent copses, and brought a heavy fire on the defenders beyond, and again an interval occurred. I then rode over to the defenders, whom I found in an entrenched position, the entrenchments being indicated by screens. An obstacle in the shape of a stream with dense clumps of gorse on either side defended the front, and this was swept by the fire of two, and in some cases even three, indicated tiers of trenches, which for the most part were exceedingly badly placed, so that the men in the rearmost ones must have infallibly blown off the heads of the defenders of the front ones. Generally speaking, the way in which troops, even Regulars, fired over

each other's heads was something appalling to witness. It is admittedly bad enough to have shells flying 10 feet over one, though the chance of a premature burst is not 1 in 500, but the thought of thousands of jumpy infantrymen pulling their triggers behind one's back is one to make even the boldest tremble. It must also be pointed out that to place tiers of trenches one behind the other and only a few feet vertically above one another is to offer the opposing artillery the best possible kind of target, one, in fact, that they can't miss—this whether ordinary or smokeless powder is used; but with the latter, even if the trenches can be sufficiently separated to prevent one acting as the stop-butt for the shells meant for the other. The responsibility of placing troops in the advanced one would be almost too great for practical men to contemplate, for with every movement behind them clearly seen, it would be impossible to support or relieve them, still more so to evacuate them during daylight. But their employment (i. e., of their trenches) is bad in any case, for there is no one defined line on which to concentrate resistance, and when the assault comes on the men fall back on the next, overrunning its defenders and masking their fire and frequently carrying them all away in panic confusion. As will be seen, we had an instance of this sort of thing this very day, even though no bullets were flying.

Meanwhile the second line had closed under cover of Long Hill on the first, and presumably the gunners were supposed to be at work, but I could see only one battery in action on the right flank of the attacking force, from whence, too, a battalion of Highlanders were advancing, taking every reasonable advantage of cover, but they would probably have been suffering unendurably from the long-range volleys; their supporting line was firing over their heads. At last the signal for the assault was given, and the second line came over the brow of Long Hill and through the copses, leaving the first, who had originally captured the advance position lying down, and in this there was nothing to criticise; the assaulting troops have done their duty when they have reached the further limit of the position they have captured, and all operations beyond should be intrusted to fresh bodies. The fresh line came on two deep in a tolerably dense line;

whether it was meant to be "line," or was merely a crowded extending formation, was not quite evident. They had about 450 yards to cross, and covered the first 150 at the ordinary quick time; then they broke into a double, and then rushed forward as hard as they could go, the fastest runners coming to the front. When they reached the obstacle which covered the position, portions halted and opened fire, but the bulk had instinctively closed in towards the few practicable passages, and continued to race up hill, tailing off more and more as the pace began to tell, but no following line appeared to back them up, and the gunners, who ought to have supported this extreme effort with every available gun at case-shot range, and for whose action Long Hill offered a splendid position, were conspicuous only by their absence. The Highlanders, too, dashed forward on the flank, and the defenders were well nigh surrounded. For a few minutes a terrific fire raged all round, and the smoke outshrouded everything, and then the "cease fire" sounded.

The assault might or might not have succeeded. All depended on the extent and thoroughness of the artillery preparation, but of this it was impossible to form an opinion, because the insufficiency of the number of blank rounds allowed them did not admit of their fire being indicated, and owing to the absence of the smoke-clouds this fire would have created, and to the curious haze already mentioned, it was impossible to say whether they were or were not in action at the time. But if it had succeeded, it would have been in spite of, and not in consequence of, the superior leading. Brave men may achieve the impossible, but only at the cost of heavy losses, and it is the special purpose of the mechanism of attack, which is something totally different to any normal attack formation, to render success with a minimum of sacrifice possible; but of a true comprehension of this mechanism there was no trace apparent.

The scheme altogether appeared too ambitious and too wide-reaching, the sort of thing that when you know beforehand exactly what force you have opposing you, may be ventured on, but which not even the most reckless leader would dare to attempt with the class of information generally obtainable in actual war; and seeing what sacrifices to reality

the limitations of time and space entailed, it seems to me that the opportunity could have been utilized to more instructional advantage for the Volunteers than was actually the case, by limiting the programme to a direct frontal attack of a division acting between others in the line of battle, and therefore precluded from extending its front. You do not in war know beforehand definitely that you will be acting on the offensive, and the enemy defending; you may both start with the same intention, and even the existence of an entrenched line, which might have been signalled from the captive balloon which was conspicuous above the heads of the assailants throughout the day, would not have been quite evidence enough to justify the assumption that the adversary had definitely renounced his intention of attacking. As it was, the position when both sides faced each other across the Long Valley was equally advantageous to the offensive of both, and a dashing charge of cavalry, for which there was ample opportunity at the time when, as above described, the advancing force was in such confusion, would have been a fitting prelude to an advance of the whole of their force, and would probably have resulted in the assailants' army being cut in two, for they ultimately held a line 2,500 yards in extent with a force which could hardly have exceeded 8,000 rifles, barely enough for a decisive assault on about half of it.

Notwithstanding the limitations of space for actual fighting, the ground offered almost ideal conditions for an infantry offensive, and the numbers available being considerably in excess of what one usually has to deal with at Aldershot, was an additional reason for giving the staff an opportunity of handling them in what is the most difficult manner, thus teaching them how to meet these difficulties, instead of setting them an easier task by allowing them to ignore them. Leaving the artillery to act as best they could from the high ground to southward on the spurs of Hungry Hill, the infantry might have been formed on the parade of the South Camp and its roads, two brigades side by side and the third in reserve. The cavalry having established the fact that the enemy held Long Hill, the leading battalions should rapidly have advanced and occupied the further edges of the copses east of Eelmoor plateau and prepared them for defence in

view of possible eventualties. Here they might have remained for the duration of the artillery duel and preparation, hidden from sight, but secure that, if the result of the artillery duel fell out against them, no body of troops could hope to face their fire down the slope of the plateau dipping towards them at point-blank range, without preparation by artillery, and for this the ground offered no facility. As the moment for the attack approached, picked skirmishers at 12 paces interval, more in the nature of ground scouts with officers from the leading companies, might have worked their way up the slope to the edge of the plateau and marked the best alignment. Then, when the signal to advance came, the leading companies, crossing the marshy hollow at the foot of the copses as best they could, should have front formed at the halt and then advanced in close-order line with the utmost possible discipline, only extending to open files, and dashing forward with a rush to the selected position, as they came in sight of the enemy. Actually even the supports moved extended up this slope, though not a man of them could be seen from the front, and this extended order used on such an occasion only shows how utterly its true *raison d'être* is misunderstood.

Within 400 yards of one another no troops with modern arms can exist stationary for five minutes; therefore, as the first line opened fire, a second should have been leaving the copses in support, advancing likewise in close order with extreme discipline, but not extending at all, as they would not be required to fire. Their arrival within 50 yards of the first line should have been the signal for the former to dash forward at full speed to gain the dead angle of Long Hill, and under the circumstances of the ground, the second line might have followed at the double, both lines leaving their machine-guns on the ridges to fire over their heads, and a couple of batteries should have galloped up to support them, more for the moral effect than anything else, whilst the remainder kept up their shrapnel fire to the last moment possible. In the dead angle so often referred to, the assaulting troops could have rested and regained their wind, whilst the third followed up towards the position they evacuated, and then, if the ensuing rush of the first and second failed, and,

as in that case they should have been, they were charged by cavalry, they would have been in a position to receive both them and the cavalry. If, as actually happened, the enemy evacuated the position, the following lines should have moved up, every available battery galloped up, and the attack been ultimately delivered by as many successive lines as there were available. Such an attack would have thoroughly met the conditions of the case, and would have given every one engaged in it, from the highest to lowest, an idea of what the difficulties of handling troops actually are, even without the bullets flying, and no man engaged in it but would have left the ground with a conviction of the absolute necessity for the maintenance of order, and the certainty that in close order only is such maintenance possible in rear of the actual fighting line.

The march-past which followed calls for but little remark. The cavalry and Royal Horse Artillery looked as they always do on these occasions, as long as, at any rate, the former confine their pace to a walk. The 4th Dragoon Guards, who have only recently joined at the camp, are a particularly fine-looking set of men. I have known them now for several years, but never saw them better, and, as far as can be judged, when going by in squadrons the horses are excellent, only I will reserve my final opinion on this head till I have seen them rank-past. In spite of the undeniable hard work and exposure entailed by last week's cavalry campaign down about Woolmer, during which the weather was very unfavorable, none of the horses throughout looked any the worse, and indeed for the most part were actually in better fighting condition than in their usual state of over-fatness. The mounted infantry were unfortunate enough to give their opponents an occasion for laughter: the first two companies went by very creditably, but in front of the third an officer's horse turned restive, and the troop-horses immediately following him became unsteady, finally the whole of the center halted, and their riders, without spurs apparently, could not induce them to move forward, so that the wings swung forward crescent-wise, and for a few moments the disorder was disgraceful, and the whole column in rear threatened to be

checked. Fortunately, the animals yielded to a certain amount of bad language, and resumed their progress before the check had run back to the saluting base.

Of the infantry all one can say is that they were evidently doing their best. In the old days it may have been possible to drill men to go by like a wall at the shoulder, but well carried back; but the task is beyond the power of our recruit battalions in England, and their evident straining to succeed only increased the painful impression of the whole. The moment, however, they came to the slope, their appearance changed wonderfully; they recovered the normal balance of men in motion and swung along keeping better dressing than they actually had done on the passing line, in spite of their painstaking efforts and niggling short steps. The shoulder both in the "long" and "short" manual exercise should be abolished, and the men allowed to march-past at the slope instead; they would then be fit to compare with any troops in Europe in this respect, which at present they certainly are not.

The Volunteers did not make on me such a favorable impression as at Wimbledon; the truth is, they had been out under arms a little too long, and though physically the work had been light, they could no longer keep their attention fixed on the matter in hand. They tried, too, one could see that, but they did not all try together, and many of the faces looked quite dazed, and mentally weary. In physique many of the companies were tall, and one or two remarkably well set up, but as a body they were conspicuously hollow-chested, and, man for man, the "puny weaklings," as the papers delight in calling our Regular battalions, would have knocked their heads off in a service of fist encounters with perfect ease; the Regular recruit may not be the ideal type of manhood when you first get him, but a few months of physical drill and gymnasium do wonders for him. Whilst on this topic, I may call attention to the far too exalted ideas of the physical development of our race at the age at which we take our recruits, that many people appear to hold. Sandhurst cadets, chosen from the pick of the upper middle class, ought to be a fair type of our best, yet, turning to the aver-

age measurements of their senior division, given in last month's number of the *Royal Military College Magazine*, I find all they can boast of in average age—18 years 11.71 months; height, 5 feet 8 inches; weight, 10 stone; chest, 34 6-8 inches; forearm, 10 $\frac{1}{2}$ inches; upper arm, 11 $\frac{1}{2}$ inches. If, after several months' gymnastics and training of all kinds, the pick of the country cannot do better than that, how can we expect a higher average of chest measurement and weight, the only two factors that really signify, from the classes from which our recruits as a body are mostly taken?

Whilst writing the above, the August number of the *Journal of the United Service Institution* has just come to hand, and I find in it two excellent articles: one by Capt. Grierson on the German maneuvers, the other a précis of the last published opinions of Bronsart von Schellendorf on the modern infantry combat, which latter is of altogether exceptional interest on account of the part its author has had in the evolution of the new German infantry regulations, and his consistent opposition to the extreme school of extended-order fanatics. Briefly, his views may be summed up as extended order in the fighting line, not to reduce but to inflict loss, and rigid discipline, and close order in the rear and no normal attack formation at any price. As soon as I obtain a copy of the original I hope to send a more detailed account.

FIELD DAY AT ALDERSHOT.

In order to have as fresh an impression as possible on my mind of the present state of efficiency of our troops at Aldershot, to guide me in making comparisons with the French and German ones I am just starting to see, I attended a big field day of opposing forces held last week on the ground behind the Staff College between the Windsor ride on the north and the Bagshot Blackwater road to the south. Every Sandhurst cadet, still more every Staff College *élève*, has had to survey this tract of ground, so I need waste but few words on description. Briefly, the plateau of the Bagshot sands runs north and south from about the Jolly Farmer, and throws off two broad, flat-topped spurs to the westward, between which flow the two arms of the Wish, which, within the area

under consideration, are separated by a projecting tongue of land, with very steep sides, known as Saddleback Ridge. To the east the ground is densely wooded, and to the west it is covered with heather and patches of fir scrub, whilst the main arm of the Wish—i. e., the most northerly—is fringed with birch, beech, and osiers of about ten years' growth. The heather is full of holes, and the conditions generally most unfavorable for mounted troops or infantry in close-order formation. The attacking force, supposed to have been detached from the main body of an army moving on London, consisted of 2 cavalry regiments, 1 horse and 3 field batteries, and 2 brigades of infantry, one of 3 and the other of 4 battalions. The defenders had 1 regiment of cavalry, 1 mounted infantry regiment, 1 horse and 3 field batteries, and 4½ battalions of infantry in 2 brigades. Their orders were not to "precipitate an engagement, but if attacked to fall back, as slowly as possible consistently with safety, making your final stand on the danger flag-staff hill, R. M. C. rifles range, where supports will reach you at 12:15 p. m."

The outposts were being driven in as I arrived on the ground from the southward, and reaching the edge of the plateau looking northward I saw the white helmets of the enemy's infantry lining the edge of the slopes south of the Windsor ride, with their batteries apparently dispersed along the whole front, and only a few yards in rear of their infantry.

Four batteries on the attacking side were already in action, at 1,600 yards, and at that distance should have exterminated their dispersed opponent in half an hour. On my right several battalions could be seen and heard moving down through the woods to the eastward; in front of the artillery, a single battalion with a small detachment, a weak company, a little in advance and to the flank, perhaps 100 yards away from its main body, was moving obliquely up the reverse slope of Saddleback Hill, and further away to the left, the Hussars of the defenders were skirmishing with our Dragoons, who showed a considerable want of enterprise and go, for the Hussars were south of Saddleback Hill and could see

all that was going on under its cover, and presently took a sharp advantage of it, bringing a troop up, under cover, to the extreme westerly point of the ridge, and charging down on the battalion and detachment already referred to. The cavalry had not 100 yards to cover, and only received the infantry fire in the act of pulling up. No very great result could have been expected, but its effect must have seriously shaken the confidence of the infantry, who, in view of the proximity of their own cavalry in overwhelming force, had a right almost to assume themselves secure from such annoyance. This episode led to a short halt, whilst the umpires came to a decision which was favorable to the Hussars, and then the latter, free again to act, swung round the hill, and charged right down upon the flank and rear of another party of infantry belonging to the advance guard, which had just opened fire on the bulk of the Hussar regiment, who were retiring across their front before the advance of our cavalry brigade, who had at last been stung into action. The whole scene was for a moment very confused and hard to unravel, but it is so instructive an instance of how luck favors boldness, and want of enterprise is punished, that I cannot help pursuing it further. The assailants' cavalry, being in great superiority of charging force,—viz., the 4th Dragoon Guards, heavies, and the 5th Dragoon Guards, Lancers,—should have pushed boldly forward and driven the Hussars in at the very first; the latter would then have had no opportunity of seeing behind Saddleback Hill, and under its cover the whole force might then have been massed for the attack. Their failure to do this gave the Hussars their chance, and had it been real,—after riding down and dispersing the infantry they first came on,—they would have wheeled up to retire, and have fallen on the rear of the second body some ten minutes sooner than they actually did, and in the confusion they created the regiment itself might have trotted across the front of the infantry unnoticed. As it was, the halt for the umpires' decision made them too late, and the regiment would have been half destroyed already before the flank and rear attack took effect.

Meanwhile the Dragoons, who up to this time had been justifying their origin by dismounted action, had been com-

ing on, and I am bound to admit that, considering the infamous nature of the ground, their advance in line of squadron columns was excellent, but, as is usually the case, one mistake too often entails another, and they fell into a new trap. Had they charged ten minutes sooner, they would have had room to do so effectually, and if the Hussars had stood, would have wiped them out by weight and numbers without interference on the part of the infantry and artillery behind, for the ridge would have hidden them from sight, and all the defenders would have seen would have been the stragglers and riderless horses tailing over the hill; but as it was, when they reached the crest of the ridge the Hussars were already safe behind the Wish, the wooded and boggy edges of which they had promptly lined with dismounted men, who poured a heavy fire into the would-be pursuers at about 250 yards range, whilst the infantry and artillery from the main position, by their increased liveliness, appeared to be overwhelming them with volleys and shrapnel at not more than 1,000 yards. Under these circumstances, nothing remained but to halt and go back, and this was accordingly done. How many in real warfare would have recrossed the hill it is hard to say—very few, I should imagine. The cavalry scrimmage over, there was time to turn one's attention to the other arms, and this is about what I saw: The original advance guard had lined the wooded margin of the Wish, and the first supporting lines were being brought up to strengthen it. One of these, a red-coated battalion, advanced for some distance in excellent order, considering the ground, in two-deep line, and I was already congratulating myself on seeing common sense applied at last, when at the critical moment, and within 500 yards of the enemy, it suddenly went "fours left" and proceeded across his front. What is to be hoped for from commanding officers capable of such an action? To my left rear, a strong battalion of the Cameronians were coming up the reverse slope of the hill in excellent order in quarter-column. As they approached the top they halted by a sign from their leader, and by another deployed into line without noise or confusion. They were thoroughly alert and in hand; the deployment completed, they doubled over the ridge and down to the cover of the copses below them.

This was done in excellent style, and actually would not have cost them a man, for I found out afterwards that the artillery and infantry on the other side had overestimated the range by 1,000 yards on a total of 800. The same remark applies to the advance of the artillery which now took place. With considerable difficulty, but with undeniable skill, they had been brought down the almost precipitous slopes of the plateau on which they were first in action, and then, having re-established their order, had wheeled outwards in column of subdivisions, and attacked Saddleback Hill by the two roads leading to its two ends. This entailed their galloping along the top of the ridge in full view of the enemy to get room to come into action—a risky proceeding, but one which, as it happened, would have passed unpunished, for, as above mentioned, the enemy were firing far over their heads, and by good luck they themselves opened fire with the correct range to start with. I may add that my information as to what went on on the other side was obtained by prearrangement with a friend, and that we afterwards checked the distances by the 6-inch ordnance map. Two other points struck me with regard to this artillery position; one was that the ridge was so narrow in one place that one out of the three batteries that came across could not have fired more than a single round, as, even with the brake on, the guns would have tumbled backwards down the reverse slope—and hence the importance of a quick-firing non-recoil arrangement; and the other, that, owing to the same steepness of the ground, the service of ammunition would have been exceedingly difficult, for the limbers had to halt at least 100 feet vertically below the guns, and one can imagine the fatigue it would have caused to the men to have had to carry the ammunition that height up a slope of about 1 in 3. The infantry attack was now beginning in earnest, and I rode down to the Wish to see beyond the screen of the trees which border it throughout. I found a scene of confusion exactly similar to what one reads of as happening in the Franco-German War. Certainly our existing practice has the advantage of familiarizing our subalterns with bringing order out of disorder, and after a year or so at Aldershot any one of them will at least have had better opportunities of prac-

tising this sort of thing than our grandfathers had after going through the whole of the Peninsula. The advance had already got within 150 yards of the enemy—the whole distance down to the Wish could not have exceeded 400, and in places was less. The line had been heavily reinforced, and, to avoid overcrowding, the sections that had been squeezed out, or had found no room in the line, were lying down twenty to thirty yards behind it, and, I regret to say, in more than one instance firing gayly into their own men from behind. Presently, for some unexplained reason, possibly an umpire's order, the whole of the right wing turned and bolted down the hill, and were received and halted by the following line; and I saw an energetic brigadier and his brigade major both racing about on foot, trying to re-establish order, and the advance was again renewed, and again came to a stand about 100 yards from the enemy. The confusion then became so great that it is impossible to give a detailed idea of what happened. In places the lines were firing into one another at 30 yards range only. A horse battery of the defenders fought in line side by side with its infantry, and, though certainly not more than 50 yards separated it from the assailants, it managed to limber up and escape.

Still, though there was very much to criticise, on the whole the men around me were better in hand than usual, and certainly took an intelligent interest in the matter, judging by the remarks that I heard, the spirit of which only Kipling could possibly reproduce. The ground throughout was most unfavorable to the maintenance of order, but the tendency seemed to be to preserve it as much as possible. The main point that really struck one was that the picture ultimately became far too like the 1870 style of warfare, which, though no doubt unavoidable under the circumstances,—viz., the short range of the German rifle as opposed to the French one,—is exactly the opposite of what we nowadays desire. With the present range of the weapons in use, the ground was most favorable for the attack, and all the work could have been done almost without exposure at longer distances.

A dashing cavalry would, as already pointed out, have driven in the enemy's scouts and prevented his ascertaining what was going on beyond the Saddleback, behind which then, whilst the gunners fired away from the plateau to the south, the bulk of the infantry could have been brought up. The first line then being deployed under cover, and moving up to the crest of the ridge in perfect order, two deep, there would have followed the fire preparation by both infantry and artillery, and the latter being at 1,600, the former at 800 yards and at a little lower level, their fire could have been safely combined on the same object. Ten minutes of this would have seriously damped the accuracy of the defenders' fire, and then, when the second line had been brought up, similarly deployed, to within 20 or 30 yards of the crest where they would be entirely under cover, the first would rise and rush down the slope to the stream. As a rule, I do not believe in tiers of infantry fire, but in this instance it might possibly be safely employed, and then the certainty of such a fire superiority would be obtained that the subsequent rush over the last 300 yards would occasion but trifling loss. Even if the defender hung on desperately, and beat off the first attempt, the second line would be close at hand to move down in support, whilst the third took up its place. And all attempts to assume the offensivé on the part of the defender could only result in failure against the combined effect of the artillery fire, the second line and the remnants still clinging to the edge of the stream. This plan at least utilizes to the utmost the capability of the new weapons, and exposes the minimum number of men requisite for the acquisition of the necessary fire-power for the least time. But to willfully throw away the gain in range and accuracy, keeping a whole brigade in successive lines out in the fire whilst advancing by little niggling rushes, promises the maximum of loss for the minimum of effect, and in real warfare would entail a funereal catastrophe of the first order.

NOTES ON THE FRENCH MANEUVERS.

I feel too dazed by the mass of men and number of details that have come before me during the past week to do more than note, before the mail goes out, a few of the most salient tactical facts that have come before me, while they are still fresh in my memory. I formed one of a party of six British officers who met by chance at Bar sur Aube to follow the maneuvers, and as we spread ourselves about on the battle-fields and afterwards compared our impressions, we managed to put together a good deal of information. At the outset I will state that we were treated throughout with the greatest civility, being allowed to go pretty much where we liked as soon as the police had satisfied themselves that we were what we said we were, a very reasonable precaution for them to take. For the first forty-eight hours we were, in fact, pretty closely followed by "mouchards" of the traditional type, about as transparently disguised as an average British plain-clothed detective in the regulation ammunition boots, but when they saw we were all right, they ceased to worry us, and, in fact, became quite friendly. We stood them drinks, gave them lifts in our carriage, and exchanged views on the English and French armies with great frankness, parting eventually on most cordial terms. We missed the operations of the first day, the 3d September, but were present at the great fight of the 5th and 6th Corps at and near Sesmont. The ground was of the usual chalk downs type—long, rolling, convex slopes, the crests some 2,000 yards apart. The way the two armies came in contact on this day was extremely curious. The French have no divisional cavalry, except a squadron for orderlies and scouting purposes, the bulk of the cavalry being either formed in divisions for two or more corps, or in brigades for corps acting alone. The two brigades in this instance had an encounter in the early morning on the flanks, and afterwards neutralized each other throughout the day. When, therefore, the two main bodies started to find one another, they appear to have been pretty badly informed as to each other's position. The question turned on which side could reach a ridge, which dominated the plain for many miles round, first

and hold it. The 6th Corps advanced its infantry divisions formed to fight anywhere, lines of company columns leading, preceded by only a few infantry ground scouts. The 5th Corps sent on its artillery first to seize the ridge, and had they been ten minutes earlier, their fire on the columns descending the opposite slope would probably have been annihilating, for their artillery was not in position to cover the advance, but marching some distance in rear, and would have had to come into action under the enemy's fire. But the 5th Corps missed its chance, and both sides reached the summit of the hill simultaneously, and the artillery, caught in the act of unlimbering by magazine fire at 150 yards, for a great part must have been totally crushed before firing a shot. The following infantry, too, must have suffered most severely, and now was the chance for a divisional cavalry charge, but there was none present; only the support of a few flankers, all that happened to be at hand, made a plucky dash at the nearest battery, and were in it before the first round was fired.

I take it, this *contretemps* simply destroyed the day, and that the subsequent maneuvers were only to prevent the time being wasted, for on no other supposition can I account for the manner in which the troops were now handled: troops within 500 yards of the enemy made processional flank marches to rectify their positions, and finally a whole brigade was moved slowly across our front in a solid mass, and not more than 3,500 yards away from some sixteen batteries. It was or would have been St. Privat over again, and the movement can only have been undertaken as a piece of brigade drill.

I noticed on my way out some attempts at shelter trenches of a very weak and insufficient profile, and exceedingly badly placed as regards the ground.

I was most agreeably surprised by the steadiness of the men under arms and the fire discipline; of actual smartness such as one sees in Germany there was none, but the men were undeniably in the hands of their leaders and did as they were ordered, but without any show of keenness. On the whole, I began to think I had formed too prejudiced an opinion of their merits, but what I afterwards saw convinced

me that though, since I last saw them, very great progress indeed had been made, still things were very far short of what they should have been.

The next day was spent in changing quarters, and there was little or no fighting, and Sunday following, there was nothing to do but to saunter round and study the men and horses. Of the latter I can only say that I was astounded. The artillery teams, though not very uniform, were in all cases good, and in some excellent, far better than any I have seen during the last two years at Aldershot. The cavalry, of which, however, I only saw some 500, but stripped for watering, showed an immense improvement in shape and quality, but all were uniformly wanting in condition and muscle, and the artillery had fully half of their mounts suffering from sore backs, girth and harness galls, all of which showed that the science of keeping horses in condition is as yet at a very low level in this army, as compared with their rivals across the frontier.

Monday, the 7th September, was the first day on which the whole four corps were engaged—viz., the 5th and 6th under Gallifet against the 7th and 8th under Davoust. Here let me describe the appearance of the former. Though he took part in the Crimea, and cannot be under 60 years of age, he looks all over a smart young cavalry subaltern, a small dapper little man, about 5 feet 8 inches and 10 stone in weight; with a bronzed complexion, and hardly a wrinkle on his face, he looks as if he had indeed discovered the elixir of eternal youth. A more striking man it would be hard to find, and were he permitted to exercise his full influence on the cavalry, they would be in a far different state to that in which they actually are, though indeed, even in this arm, a most extraordinary improvement is visible, not only in the horses, which, as above stated, compare more than favorably with our own, but particularly in the seat of the individual men. Owing, however, to the distinguished part he took in the suppression of the Commune, he has been hampered at every turn by the virulent hatred of the Socialists, and has suffered many and bitter disappointments and hindrances in endeavoring to do his duty to his country, which he serves wholly and undividedly, without reference to poli-

tics. There is indeed a leader of men in Galliffet, if only he is allowed the opportunity. But to return to the day, the fight took place in a district curiously resembling South Africa—flat-topped “koppjes” and long, undulating ridges. On one of these table-topped hills, in the center of the position of the 7th and 8th Corps, I watched the proceedings, and could take in pretty well all the doings on a front of battle of at least 8 miles. The latter two corps under Davoust were taking up their positions on a long ridge running about east and west, commanded near the center by another long, scarped plateau, which here approached to within 1,800 yards, and then fell back about northeast, overlooking an enormous undulating plain many miles in extent. As we knew that Galliffet's army lay with its bulk on Davoust's left and within 3 or 4 miles, our interest was intense when we saw the latter withdrawing his troops from left to right. Pretty soon the balloon, which was a feature in these operations, and for the day belonged to Galliffet, was seen to rise, and presently a long line of guns opened from a most commanding position against Davoust's left, and shortly afterwards heavy and sustained firing announced that what we expected had come about—viz., an attempt to crush and roll up the exposed flank of the other army. Almost immediately the stream of troops towards the right stopped, and began to flow in the opposite direction. We saw the batteries of the 8th Corps, which formed the left, take up a position facing west and north, and the reserves close up towards the threatened point. The first village was carried by the attack, and Davoust's position became perilous in the extreme, for he was in evident danger of being crushed in detail and his batteries and reserves crowded together in a pronounced salient and enveloped by a converging fire, against which the ground offered only concealment from sight, but no security from projectiles. It seemed to me almost hopeless, and evidently the general officer commanding on the spot took the same view of it, for he brought up a cavalry regiment and launched it out on a perfectly hopeless attack against lines of artillery flanked by dense clouds of skirmishers. Vionville must have been a joke to this. The umpires also took the same view, and the cavalry were com-

elled to retire, wheeling up to the right by troops and then changing direction to the rear, and as they came back they presented a pretty ragged appearance. I was too far off to judge in what order the actual charge was delivered. The firing now died away on this flank, and for a time there was a lull in the action, but we now saw the 7th Corps on Davoust's right forming for an attack on the refused flank of Gallifet's army, which held a position along the plateau above mentioned as running about northeast. The gunners now began to take up their positions, but there was much indecision in their deployment, and their ranges were excessive, 4,000 yards and upwards, and far on the right we saw a cavalry division maneuvering, with what object it was difficult to perceive, but, in spite of the distance, a want of precision was very apparent in their working. Then at last the whole infantry advanced to the attack, the first line in sections in extended order at about two men to three paces in single rank, followed by succeeding lines all in file or fours, heading towards the enemy. As far as the eye could reach, the plain was covered with them, the lines being not more than 100 yards apart, and the columns at about the same interval. More guns came up, and with them 8 of the new 12-centimeter howitzers intended for firing melinite shells of about 60 pounds weight. The whole artillery now began to advance to a second position, and the roar of their fire became almost continuous; all together on this wing there must have been close on 250 guns in action. The front to be assaulted was even longer, steeper, and at least as open as the celebrated glacis of St. Privat, and one could see with glasses that the men were utterly done; the lines closed on each other and presented an almost ideal target to the enemy, and now right in rear we saw first two solid battalion columns, and behind them a whole regiment in one solid square column, advancing to the assault with fixed bayonets and a considerable attempt at close-order discipline and style, whilst in the extreme right rear the cavalry division was seen trotting up. What the result of the assault might have been it is impossible to say, if the guns of the attack had really overpowered those of the defence. After all, though, the method adopted appeared the worst possible

to insure success. Still such things have happened, but one would like to know what the result of the defeat Davoust's left had already suffered would have had on his army as a whole. At any rate, the director general of the proceedings, Saussier, sounded the "cease fire," and up to the present has published no decision, which looks as if he were of the same opinion that we all held.

To me it seemed that Davoust was hopelessly out-generalled, his left being exposed to attack by crushing numbers before the right could come up in line. His game evidently was to withdraw it at once till the two were within supporting distance of one another, and this at first he appears, by the movement from left to right alluded to above, to have intended doing. But his decision, if made, was upset by almost the first shot fired, and then his artillery nearest at hand took up a line facing west against the attacking troops, whilst apparently six batteries slated him from the north, and the next section of his guns, which appeared to be the corps artillery of the 8th Corps, came up against the latter some half an hour later. Of course, things at a maneuver go more rapidly than in actual war, but the point must be remembered in one's plan as part of the circumstances to be dealt with, and nothing can excuse a man for fighting two separate and distinct actions, divided from one another both by time and space, against an enemy who opposes to him a united front.

A few of the details of the fight deserve notice. At the close of the action Davoust's corps were divided by a gap of at least 2,000 yards width; whilst the action on the left was at its height, an infantry brigade was being moved from right to left at our feet; six batteries of artillery appeared trotting up on a road crossing the line of march of the infantry; the leading battery commander signalled to the infantry to let him pass, and the third battalion halted together with the following three to do so, and he trotted through, the two first battalions wandering off into a convenient gully, and we never saw them again. Meanwhile, whilst the guns were passing, the commanders of the two arms consulted and apparently arrived at a new decision, for the infantry now wheeled up to the front and marched off down into a hollow, where they

formed by degrees as a sort of escort or flank guard to the gunners. Each battalion followed in succession, changing direction at the point where the gunners at first checked their march, but though there was an excellent road leading across the angle formed by the wheel, no one thought of saving the men, who appeared very much distressed, by cutting across and thus saving some 300 yards of ploughed field. Also it appeared that there was no pressing urgency for the guns after all, for when the leading battery reached the spot on which line was eventually formed, it halted in column of route facing towards the enemy, who was enfilading it from its left front at about 3,000 yards, and then, after some discussion, wheeled about and took up a position under cover, from sight only, a little to the rear, where it was joined by the remaining five batteries. Then again another battery was moved to the front, again in column of route for a couple of hundred yards, and again halted, and finally another battery was selected to advance, and after fully 25 minutes delay the line was eventually formed, about half facing north-northeast, the other half north-northwest. All comment on this is unnecessary.

Many of the gun teams have white horses and proved terribly conspicuous. As far as the artillery is concerned, smokeless powder is no concealment; the flash is distinctly apparent and enables one to define the position of the gun with ease, even at extreme ranges. Even at 9,000 yards, I could locate the guns easily with field-glasses, and with Scott's telescopic sights their exact position could have been made out.

The arrangements for the maneuvers rendered it impossible for Gallifet to follow up his success: he had to be at Vandoeuvre, some 18 miles distant, on the 9th, and the whole of the 8th was therefore spent in a retreat and pursuit which called for some hard marching, and the passage of the Aube was a very interesting movement to watch, the chief point that attracted my observation being the absence of divisional cavalry and the want of dash in the pursuing artillery. The great battle at Vandoeuvre terminated the second period of the maneuvers, but the nature of the ground rendered it impossible to overlook the situation as on the

7th, and I can therefore only describe what took place immediately under my own eyes.

The two armies came into contact obliquely. Davoust must evidently have intended to outflank Galliffet's left, but, apparently not knowing where the left stood, he advanced with a whole infantry division obliquely across his enemy's front, and would have suffered most severely for the fault. I may as well describe how it happened. Driving up from Bar towards Vandoeuvre, we were able to overlook the direction the columns of the 7th Corps were taking. On reaching the summit level from the valley of the Aube, we came on a great rolling plain, stretching for miles away before us. A village lay about a mile in front of us, and we could see men at work entrenching themselves; otherwise not a sign of the 120,000 men about to engage was to be seen. Presently we saw long columns of men and guns coming over the brow of the plain away back on our left rear—i. e., about south. About this time a few of the enemy's vedettes appeared, and behind them we saw four batteries marching within a few hundred yards of a position from whence they could have taken the whole of the enemy's deployment under fire, but the few vedettes never pressed far enough forward to really see, and besides were opposed by scouts from the White Cap side. At any rate, nothing happened, and, as far as I could see, the infantry of a whole division was forward for action facing west in a hollow not 1,500 yards away from the enemy's position. This position was marked by the above-mentioned village on the main road, and a second one bearing a little south of west from the first one, and about 1,200 yards beyond it, called Niusement; a few entrenchments were dotted about, of no great value, and it appeared to be held only by an outpost line. About 8 a. m. a long line of guns opened on Niusement, at least 18 batteries, and at the same moment the infantry broke cover and began to advance towards Niusement, not towards the first village at all. I went with the right flank, and expected the fire to break out every moment, for we were passing within 400 yards of it. Six batteries of the enemy now came into action on our right front, and immediately after six more wheeled up on our left, and suddenly, when we were within say 600 yards of

Niusement, we were being fired into in front, and both flanks at once, and even from the rear; the flank section had wheeled up to reply, and the extended-order brigade had become almost a solid square.

No one seemed to mind very much, and as we were in immense numerical superiority, no doubt we might have extricated ourselves somehow, but a worse piece of rash leading it has never been my lot to see.

During the remainder of the day the progress of the troops called for no particular remark. I can only note the general conduct of the men and of each arm. The infantry were evidently much knocked up by the heat, which all the week had been very great, and they had reached a pitch of demoralization such as, with the exception of the Militia Brigade at Aldershot, which broke up on one hot field day on the Fox Hills and went to bathe in the canal—this was in 1882—I have never seen or imagined. The men loafed slowly forward, neither officers nor men taking the smallest interest in the proceedings. Whilst a desperate action was raging in front, I saw some non-commissioned officers of a company lying down in support, deliberately leave their arms on the ground and slouch forward to the edge of a hollow to have a general look round, nothing more. On the word "rise," "advance," the men raised themselves up, using their rifles as a crutch, and after settling their packs, crawled slowly forward—it sometimes took 20 seconds before the last man began to move, and yet, judging by their conduct afterwards, they could not have been unduly fatigued.

The general direction of the movements left much to be desired; I saw again and again firing lines lying down on an exposed slope at right angles to one another. The artillery, of which the French are now particularly proud, engaged at exceptional ranges and was always on the move—never still—here and there single batteries or groups of two were noticeable, and even when the batteries stood together they diverged their fire. In one case I saw a line of about twelve batteries facing south with two wheeled back on its flank, facing east—a perfectly appalling situation.

THE GERMAN ARMY.

I.

The maneuvers of the German Army during the past few months deserve more than passing attention, since they mark the culminating point of a cycle of military evolution, which began with the French Revolution almost exactly a century ago. That era introduced an entirely new factor into European warfare—namely, the conception of a nation in arms, as opposed to a standing dynastic army; and, though Napoleon the Great was quick to realize the increase of fighting power which he thereby found placed at his disposal, he had neither time nor opportunity to develop this idea to its logical conclusion. Indeed, judging by the evidence of his own actions and writings, it is doubtful whether he ever really grasped all its ultimate possibilities, for, by disregarding the main principles on which its strength was founded, he himself during the latter years of his reign was the most efficient instrument in preparing the way for his own downfall.

These main principles did not, however, escape the insight of the German leaders, trained in the school of defeat; and those would-be reformers who believe that an army can be created by the stroke of a pen, and are proportionately discouraged when they find that this is not the case, may perhaps derive encouragement from the fact that even in Germany it has taken a whole century to develop and bring into execution the full possibilities entailed by a single change of principle, and that, too, notwithstanding that in that country able men have been working incessantly and with entire self-abnegation to bring their ideas to fulfilment.

A short sketch of the successive steps which have marked this evolution is all the more necessary here, since without it it is wholly impossible to convey by a mere bald enumeration of statements any idea of how excellent the German Army really is, or the causes which have led to this excellence. Fortunately, the ideas involved are simple and may be rendered comprehensible in the simplest possible language.

Briefly stated, the French Revolution placed at the disposal of Napoleon an army far exceeding in intelligence any other one then in existence, the individuals of which fought for personal motives primarily, and not by compulsion. This state of things did not last long, it is true, but still long enough to enable the new army to defeat under its new leader every dynastic army with which it came in contact, at any rate until the year 1808. It was not Napoleon who defeated Austria, Prussia, Russia, and the rest, but the armed strength of the French nation led by Napoleon that destroyed the dynastic forces of these countries respectively—a totally different conception.

Previous to this era, a king's power of offence was determined primarily by the amount of money he could afford to expend on the recruitment and maintenance of an army, each man in which represented a certain sum of capital invested and time spent in completing his education. His life, therefore, became an exceedingly valuable thing, to be safeguarded accordingly, and hence the main desire of all generals, except those of the highest order, such as Marlborough, Frederick, and Wellington, was to gain the object of a campaign with as little bloodshed as possible, and hence maneuvering as opposed to fighting became the ruling idea of all strategists.

But the essence of the French Revolutionary Army was that at first its supply of men appeared practically inexhaustible, and Napoleon soon saw that what he could not obtain in the recognized way he could effect by a perfectly reckless expenditure of human life, not only in action, but on the march. His method was really an application of the survival of the fittest—that is to say, if he wanted 30,000 men at a given point, he started 100,000, and was perfectly satisfied even though the balance fell by the roadside. This enabled him to march and strike with a rapidity beyond the reach of his opponents, compelled to slow movement to economize their forces.

Secondly, the individual intelligence and love of distinction of his men enabled him from the very first to adopt a method of fighting—by means of skirmishers and small columns—of greater universal adaptability than the system of

the line which was opposed to it. The closed line of the Frederick and Wellington era was in itself the most perfect and economical way of employing the fire-power of an army to do a given work which could or can be devised, always provided the conditions of the ground and the spirit which animates it are favorable, and, given those conditions, it would generally attain the desired object with least expenditure of life—the main point the opposing generals had to consider; but, as pointed out above, the French could afford to be independent on this head, and, further, the resolute offensive of Napoleon's strategy generally gave the choice of ground to him, and not to his opponents.

These conditions led everywhere, except in the Peninsula and at Waterloo, to the triumph of the form of the skirmisher and small column, but as the spirit of the men changed during the course of the long wars, when France again had to resort to the most stringent measures of conscription (with substitutes allowed), and as at the same time her enemies began to oppose her with men fighting for revenge and with personal hatred, the small column had to give way, and Napoleon only retained his empire over the battlefield by the masterly use of his artillery and cavalry, which he was the first to perfect. During his last campaigns his battles resolved themselves into three main acts—the preparation by artillery at case-shot ranges, the massed charge of cavalry, and the occupation of the conquered position by dense infantry columns advancing with sloped arms. Variations, of course, occurred, but this was the general mechanism.

But before this stage was reached the work of reformation in the Prussian Army had already begun—under pressure of an outbreak of prejudice and ignorance which most seriously hampered the few men who really did understand the points involved. The obvious issue lay for the moment between the principles of the line and small columns with skirmishers. The two systems had met face to face on the fields of Jena and Auerstädt, and the latter had ultimately triumphed; therefore, "Away with the old system and copy the victors!" was the cry. Actually, the causes of defeat lay far deeper, and were primarily traceable to the faults of the

staff, which had entailed on the Prussians the necessity of attacking locally under most unfavorable conditions of ground and numbers, and, besides, the spirit of the line was dead and only the form remained. Nevertheless, the line had died gloriously; and because it was essentially a formation possible only to the most highly trained long-service troops, its resurrection for the moment was impossible. The reformers were all mad for individual-order formations, and the polemical warfare which raged round Von Bülow's tactics as a central point almost equalled in volume and intensity the similar discussion that has of late years been waged over Captain May's tactical retrospect, and both discussions in the end have proved in Germany equally destitute of permanent fruit. For the idea involved in this individual order question is based on a misapprehension of human nature. Undeniably individual order is the ideal formation, but its universal application is only conceivable in an army in which every individual is not only a hero for the moment, but remains so throughout the whole duration of a bloody action, during which his heroism is in a constant state of flux and reflux, with a downward tendency. Scharnhorst opposed the reformers with all the energy of his nature, and a sentence he wrote as criticism on one of the numerous projects submitted for his consideration—"One should teach the soldier to know how to die, and not how to avoid dying"—contains in itself the whole secret of modern German training and the explanation of its excellence.

Line being for the moment impracticable, owing to the impossibility of training the soldier adequately in the short time then available, Scharnhorst struck for universal service without substitutes, trusting to find in the individuals of higher education and intelligence thus rendered available, and in the feelings of personal hatred and revenge which the French occupation had aroused, a set-off for the qualities which in the French themselves had proved so effective in the skirmishing line, and in this endeavor he was successful.

But his death and the termination of the war put a stop to all further progress in this direction, and in every country, not excepting our own, things began to drift back into the old pre-Revolutionary condition as regards the training

of infantry for battle; indeed, they went backward, for Napoleon's latter battles having been won principally by the employment of artillery and cavalry, the tendency was rather to exalt these arms, leaving to the infantry only the task of the passive endurance of losses, for which they were prepared by stern discipline, and neglecting to develop their offensive fire-power, which implies more particularly "education" as opposed to drill. The evolution of cavalry took, as it happens, a false direction, but that at present I have no space to pursue.

The tendency towards passive discipline only was further influenced in all countries, except Prussia, by the existence of the system of paid substitutes, which by lowering the moral average of the armies rendered a sterner code more imperative. On the other hand, these countries retained the advantage of a comparatively long period of service, seven to twelve years on an average, against the three years in Prussia proper.

It may easily be imagined, too, how strong a reaction necessarily set in after the strain of years of warfare, bringing with it a gradual relaxation of effort in all grades. Men had had enough of war on the Continent, and the vast majority were only too anxious to take matters quietly for the rest of their days, and the system in Prussia of distributing the troops all over the country in small detachments made it all the more easy for those disposed to indolence to follow the bent of their inclinations.

But this much at least had been gained in Prussia, and has formed a firm basis for further improvement—namely, universal service of all classes, which insured the presence of educated men in all grades, and secured a far higher conception of duty to the country, which all owed, than was possible where the ranks were only recruited from the lowest strata of the people, and with this the possibility of a more humane treatment of the soldier and the abolition of all degrading punishments.

Though all immediate interest was dead in the vast mass of the nation, the war had brought to the front a number of the most intellectual and able men in the country, and these, with the memory of the great catastrophe and the unspeakable

ble humiliation the nation had endured vividly before them, worked conscientiously and thoroughly to raise up a higher order of leaders in time to come. They had seized the point which Napoleon had missed—viz., that an “armed nation” implied armies of such numerical proportions that no one man could lead them; and hence a delegation of responsibility downwards had become absolutely essential, which entailed the necessity of training a staff and generals capable of assuming these extended powers which were now to devolve on them. How far they were successful in this direction the events of 1866 and 1870 have since proved; but brilliant as these successes were in the aggregate, it is evident from a close study of all information now available that there were many, even amongst the superior leaders, in those years who fell far below the requirements of the circumstances, and it will be found that in the main it was to the misconceptions of men of this type that the heavy losses which now and again fell on isolated divisions and brigades were primarily due—far more so, indeed, than to any new factor of warfare introduced by the breech-loader.

That it was so can scarcely excite surprise when the condition under which these senior officers had spent their earlier years is remembered. Life in those little garrisons on the eastern frontiers or in the plains abutting on Holland must have killed the intellect in hundreds of men who, under other circumstances, might have excelled. And there is little doubt that as a fact this did happen, and during the decade between 1840 and 1850 things in Prussia had lapsed into a very easy-going way indeed; but it was in these and the previous years that the men who in 1870 had risen to command battalions and regiments had served their novitiate, and how great the influence of these first years is every one knows from personal experience.

When the accession of the old Emperor supplied the necessary power to back Von Moltke in his work, the first task, and one, too, which must have absorbed most of his energies, was the completion and correction of the mobilization scheme—a scheme which was only perfected after the experience of 1866; and it is scarcely conceivable that he can have had as much time to spare to devote to the training of the staff

as in subsequent years. At the same time it is certain from the evidence of his own writing in 1864 that he was still uncertain in his mind as to the influence the breech-loader was about to exercise on tactics.

That this influence in 1866 did take every one by surprise is undeniable. The Prussian artillery and cavalry neither proving equal to, nor, indeed, understanding, their duties in combination with the infantry; the brunt of the fighting fell on the latter, and, thanks to the power of the new arm, they came out of it successfully. But they exhibited the characteristics that were to be expected from a short-service army composed of very heterogeneous elements, insufficiently welded under the hammer of discipline, and, just as the French Revolutionary armies before them had done, they dissolved under the fire of the muzzle-loader into lines of independent fighters, each striving to make the most of the power of the new instrument. As at the commencement of the century, a cry went up that this individual order was a good thing in itself, and therefore to be universally cultivated, and, as before, the older men of the staff met the outcry by pointing out that there was no absolute good or bad in tactics, but that everything was relative, and that, the conditions being abnormal, the results were also abnormal and could not be accepted as a guide. This at least appears to me to be the gist of Bronsart von Schellendorf's well-known reply to Captain May; but none the less every one was convinced that there was something still amiss in the training of the infantry, and when, two years later, France adopted a breech-loader far superior ballistically to their old needle-gun, an uncomfortable feeling spread through the whole army that a great change was in progress, and the exaggerated accounts of this new rifle which came over to them did not tend to make matters any simpler.

The German general staff works slowly, but very surely, and above all things avoids committing itself to any too hasty interference with the initiative of its subordinates. The regulations which were about to be issued on the eve of the outbreak of the war show that their view of the matter was still in accordance with the ideas of Von Schellendorf's

pamphlet above referred to—namely, that the conditions of the moment can alone decide the nature of the formation to be employed; but of the principle of the “education of the individual,” the essence of the new system, I can discover no trace whatever. Yet amongst the majority more particularly of the senior officers, no longer in immediate contact with the troops themselves, the idea—correct enough in itself had the primary point on which its success depends been attended to—largely prevailed that the best plan to be pursued was the extension of large bodies of skirmishers and immediate advance to decisive range. It was to this tendency, combined with consequences of the failure of artillery and cavalry in the previous campaign, that the special physiognomy of the early battles of 1870 was directly due. And in this way: in 1866 the cavalry had been markedly deficient in scouting duties, hence the infantry had learned to rely mainly on their own advance guards for information; and this tendency was also partly inherited from tradition of the time when fighting began at 300 to 400 yards, when indeed it was justifiable enough, but things were altogether different when at 1,500 the infantry were already liable to be overwhelmed by a storm of bullets, through which they had to fight their way for a thousand yards before they reached the range of effectiveness of their own weapons. Further, having learned to fight for themselves without reference to the artillery—partly as a lesson from 1866, partly as a consequence of the inevitable curtailment of the artillery preparation in peace maneuvers—the tendency was to dash ahead at once, immediately on coming under fire. This led again and again to the leading battalions of a column being shot to pieces before the advance-guard batteries had had time to get the range, and then began a race against time to fill up the casualties. Without any prearranged idea of co-operation, each battalion as it reached the fight formed up in company columns and moved into the fight, and in a few moments a scene of confusion ensued which even the official account of the general staff admits to have been indescribable.

On the actors and spectators this state of affairs made different impressions according to their higher or lower

rank. The captain and subalterns accepted the confusion as an inevitable consequence of the new conditions of breech-loading fire. The higher ranks saw nothing inevitable about it, but only the consequences of hasty and inconsiderate assault, and practically it was the former only who published their experiences, and these experiences, being eagerly translated and studied in this country, have become the recognized data on which our tactical systems have been built up.

Another point also deserves mention. As the war went on, the individual consciousness of superiority rose on the German side in precise proportion as it fell on the other one; further, in each successive action the artillery and the infantry learned to co-operate more thoroughly with one another, and thus not only were the losses of the first actions not repeated, but the apparent success of the individual-order system became more marked, and the conviction in the lower ranks became strengthened that the diminution of losses was the consequence of the increased employment of the new order, and not, as actually was the case, to a better thought-out system of co-operation.

This idea once grasped, the extreme caution which marked the next steps in evolution of the German infantry tactics becomes easily explicable.

These two facts alone remained certainly established by experience. Isolated cases of exceedingly heavy loss, 30 per cent and upwards, had indeed occurred, and on the whole the discipline of the short-service army had not proved equal to meet the strain, a strain not more severe than had been borne again and again victoriously by troops of the same race and within the memory of some of their leaders, and the problem was, how to decrease the strain by diminishing the losses and at the same time to increase the discipline by an altered system of training; and for the moment no one appeared ready with a solution.

That the general staff was not prepared to furnish one appears evident from the extraordinary latitude which during the next succeeding years was allowed to all grades in the interpretation of the existing regulations. As Prince Hohenlohe has pointed out, every commander felt himself

bound in honor to produce at his annual inspection some original plan or other for attacking without unnecessary bloodshed, and round these so-called "Türken," the slang name given to these eccentricities, a tremendous polemical literature grew up, and for the reason above given, two fallacies underlay the whole question—first, the fire to be faced was assumed always as a constant quantity; and, secondly, the fire being assumed as constant and the losses having been shown by statistics to have diminished as individual order was more and more employed, the conclusion was jumped at that in individual order alone lay a royal road to victory without bloodshed.

Since both these fallacies have largely crept into our own literature, it seems necessary to say a word or two to expose them. The fire to be faced is obviously never exactly the same on any two occasions, but depends not only on the number of rifles employed, but on the field of fire, and more particularly on the state of the defenders' nerves, which necessarily vary constantly and indefinitely in a downward direction under the incidence of artillery fire.

Next, as regards the losses of the attacking troops, as concerning the units themselves, these only depend on the quality and discipline of these troops, and the better the troops the heavier the losses they will bear without flinching. If the avoidance of loss were the sole object of tactical training, then the way to reduce it to a minimum is obvious; do away with all discipline whatever, and the troops will break and run at the first shot, and, unless the pursuing cavalry manage to cut in on them, their losses will be infinitesimal indeed.

The great bulk of the infantry officers in Germany took very little interest in these discussions, for the system on which they had been trained made them too practical in their aims and allowed them time for thinking; and since the whole possibility of the great evolution which has taken place in Germany depended on the fact that such officers did exist in sufficient number, it is worth while inquiring why it was that in Germany only such men were found. Short service was here the determining condition. In the old pre-Jena days, the captains of companies or squadrons were ex-

actly what in the majority of British regiments they still are, and for precisely the same reasons. Still further back in the history of the German Army, the same system as that to which we owed our purchase system was still in vogue. The captain either recruited and brought his company complete in men, receiving the patent of rank in exchange, or else, being selected by the "iuhaber"—that is, proprietor—of the regiment for the purpose, he was given a sum of money with which to raise and equip a certain number of men. This done, he became the "company father," responsible for everything relating to his command. But as the evolution of fire-power led, under the old Dessauer and Saldern, to the substitution of line formations and the battalion as unit, instead of the deep formation, the company commander lost his tactical importance and became only an administrative official. To render the new movements in battalion possible, the companies had to be equalized on parade, and lost their independence completely; indeed, they even lost their names, the battalions being divided into eight divisions only, irrespective of the number of companies, and the captain's sole duty was limited to the giving of words of command, all responsibilities remaining in the hands of the battalion commanders. At the same time, once regiments were raised, they were recruited by regiments and not by companies, and the recruits, few in number under the long-service system, were trained by specialists—that is, by the adjutant and sergeant-major—and, in consequence, the captains, being no longer responsible for the fighting training of their men, soon lost the knowledge necessary for imparting it.

But with the introduction of short service the number of recruits which had annually to be drilled vastly exceeded the power of the existing staff, and partly also as a consequence of the number of small detachments and garrisons they had to be handed over to the captains to drill and train. This compelled the captains to learn thoroughly, for you cannot teach what you do not know, and under these conditions the Prussian junior officers had been at work when the first war broke out for sixty years, though, it is true, actual high-pressure competition had only set in in the last six, on the accession of the late Emperor William.

Hence, though in the main the system of training in the Prussian Army was drilling in the mass and not training by individuals, when on the battle-field all higher organizations were disintegrated by fire, the great majority of the captains, trained for years to assume responsibility, did so at once without any great friction, and when the two campaigns were at an end there were hundreds who had studied the subject of military training practically and knew exactly where the difficulties lay, and being given, as above pointed out, a comparatively free hand, at once supplied the solution to the problem how to combine the discipline of closed bodies with the necessities of individual fighting by introducing into their companies the system of individual education of the soldiers.

Their reasoning was this: Discipline is the product of a number of factors—obedience under penalty of punishment, emulation, patriotism, honor, and so forth. Obedience under fear of the stick utterly failed in 1806, but the other factors can only be felt by cultivated minds; therefore, we must cultivate the individual mind. This was the rough conception, and soon it graduated down into a conviction that each one felt, even if he could not express it in words—but he learnt it as a practical fact in front of his troops—discipline is the resultant will-power of many minds acting in the same direction; the more united the thought and the greater the concentration of will in the individual, the more complete is its power. Therefore, again we must educate the minds of the individuals to appreciate facts alike, and at the same time train the power of concentration by exacting the performance of every order “with the complete exertion of mind and body.” It is not enough that an order should be obeyed; how it is obeyed is the real consideration.

As a fact, every good drill in every army has known and realized the necessity for instantaneous obedience for centuries; it is the justification of “smartness.” No practical soldier ever thought for a moment that the wall-like precision of a march-past, or the lightning-like rapidity with which arms were shouldered, had much to do with the science of theoretical tactics; but he did know that these were outward visible signs of the knowledge and spirit which alone

rendered the execution of practical tactics on the battle-field possible. What he did not know, and what to this day no nation but the Germans have thoroughly realized, was, that mechanical obedience alone would not suffice, but that it must be combined with the higher education of the man himself. Volumes have been written in support of either view, and both sides have been free with ridicule, but, as usual, truth lies between the extremes, and true fighting efficiency can only be obtained by a combination of both.

Some years ago a hot discussion on this subject was raised in Austria, and the Archduke Johann published a pamphlet entitled "Drill or Education," a copy of which was sent to the old German Emperor, who read it and passed it on to Bronsart von Schellendorf, with the remark, "Read this, it is excellent; and you will see I have already made my comment on it on the title-page;" and, looking at the place indicated, Von Schellendorf saw that the Emperor had merely passed his pencil through the word "or" and substituted for it "and," making it read "Drill and Education."

II.

In my previous letter I endeavored to trace out the causes which have led to the present excellence of the German Army. Summed up briefly, these are as follows:

First, the great attention paid to the training of general officers and their staff. This has been the special work of Von Moltke and the "Kriegs Akademie" or Staff College, but was only partly completed when the wars of 1866 and 1870 broke out.

Secondly, the practical knowledge possessed by the company officers of the detail work of preparing troops for war—this being a direct consequence of the obligation short service imposed on them, of being personally responsible for the training of their men.

And, thirdly, the possibility, due only to the existence of this practical knowledge, of substituting the system of "individual" for the "mass" training of former days.

Each step in their progress has thus grown out of ground previously made good by experience, and in no case is there

any indication of the reform by "ukase" which characterizes the military evolution of other nations.

Another great advantage of the German system of decentralization is the possibility of selecting the best men for staff duties and commands, an advantage which no other system can supply. This, however, had not come fully into force at the time of the 1870 campaign.

Further, in estimating the efficiency of the army that crossed the French frontier in the summer of that year, it must not be forgotten that the advantages above mentioned existed in Prussia only, for in Bavaria, Würtemberg, and other states, not only was there no Von Moltke, but universal liability to service had only come into force during 1867, the system of paid substitutes having hitherto very generally prevailed; and, in addition, the troops of the old German Confederation having only faced the breech-loader, not used it, even more exaggerated opinions as to its power prevailed than in Prussia.

Having now cleared the ground sufficiently to proceed with the further evolution of the army since 1870, with special reference to the incidents observed at the recent maneuvers, I proceed to take the three arms in succession, commencing with the infantry.

In addition to the point relating to the individual training of the recruit already referred to in my first letter, and to which I shall have to recur later on, the next most important provision of the new regulations is the absolute prohibition they contain of any attempt to systematize or formulate a normal scheme of attack. The idea involved is that the conditions under which collisions of armed forces occur are so uncertain—varying from a skirmish of outposts on all sorts of ground, and passing through all stages down to a final effort at the end of a long day, when the physical and mental condition of both sides has sunk to such a level that it is no longer a question of making them advance in the best theoretical order, but the one thing is to get them to fight at all—that no one normal system is conceivable equally adapted to all; and further, that, by sanctioning any such system or systems, the leaders of all grades, by being relieved of direct responsibility and being able to shelter themselves against all possi-

ble ill success under the wording of the regulations, are deprived of all incentive to learn how to employ the means at their disposal to the best advantage under all circumstances as they arise. An army really efficient for war requires no such cut-and-dried aids, but finds, in the individual training of each grade to exercise each his own judgment by constant practice in front of the troops, supervised and corrected in peace-time by trained umpires and superior officers, its surest guarantee of success.

What I am now about to describe, therefore, can only be taken as a special instance of the employment of troops in a particular case, but I think it will be of use as an illustration of the results of the above-mentioned principles. It was an engagement at Schlottheim, in which one division of the 11th Corps struck fair on the flank of the 4th Corps and was adjudged to have rolled the latter up. I followed the march of the outer brigade of this division, six battalions and three batteries, the latter behind the leading regiment; on two other parallel roads, distant respectively some 2,000 or 4,000 yards, similar columns could also be observed, all moving eastward and slightly converging on Schlottheim. We were still out of sight of the enemy's position when the boom of guns became audible, and almost immediately afterwards a few shots fell from the advanced scouts in the direction of a mass of woods, which, in two patches, with a gap between, crowned the crest of a ridge, which for the moment hid the enemy from sight. The firing ceased almost at once, the head of the column bent off from the roadway and began to form up, sending a battalion into each of the two woods, and further to the rear the column loosened and the batteries disengaged themselves and trotted up to the front, unlimbering under cover and running the guns up by hand into the position indicated by the aforesaid gap. I hurried forward and, reaching the crest of the hill, saw before me a deep valley, which here bent off almost at right angles, a towering hill some 1,200 feet high forming the apex of the angle, distant from our guns some 1,500 yards. Between us the slopes were very steep, but away to the westward, where the valley bent back, the ground fell from the position of the enemy, indicated by the flashes of his guns, with a uniform dip for

some 800 yards, and then the slopes became gently convex, thus hiding the movements of troops in the hollow. On the prolongation of the salient of the angle, and deep in the hollow, lay the village of Schlottheim, into which the head of the left column of the division was just entering, whilst its guns were trotting up the slope covered by a few Uhlan vedettes, and, further to the left, the fight appeared to have been in progress for some time, for infantry, as yet unseen from the enemy's position, were moving up the slope in lines of company columns, and a few minutes after I arrived I saw the batteries already in action limber up and advance to the front. I now crossed the hollow, and in so doing lost sight for the moment of the progress of the fight, but when I arrived at the edge of the uniform slope above mentioned, I found that the infantry, coming through Schlottheim, had preceded me, and were lining a hollow road which here ran across the enemy's front, and the guns abovementioned were just coming into action upon a little roll of the convex slope, which enabled them to fire over the heads of the infantry, though they were scarcely three hundred yards in rear. Six batteries were here unlimbered, and, as the lateral space was limited, they were crowded together at half interval; and three more batteries in a group further to the rear, finding, I suppose, no room in front, were firing over the heads of everybody.

What had been going on in the rear of the enemy's guns I have no means of knowing, but at this moment his infantry was attacking down-hill in a dense line of skirmishers, backed by an almost continuous line of supports. His position appeared about desperate, for this movement must have been visible, in part at least, to the guns on our right, and his flank batteries had been compelled to wheel up against them almost at right angles. The remainder of his guns must, therefore, have been enfiladed; and, deprived of their support, his infantry had to advance down-hill under both artillery and infantry fire, whilst our following masses could move up in company column unperceived. Nevertheless, our infantry line was itself outflanked on its left, and it became a race which side could reach this flank the sooner. Our company columns were rapidly coming up, when

I caught the sound of drums beating and saw the enemy's supporting line moving up in close order with sloped arms, and by the swing of the right arm I could tell it was a case of "parade marsch"—only resorted to under fire in moments when everything depends on the maintenance of the utmost force of will-concentration. They reached the front, and the fire now blazed out with a scarcely conceivable intensity. I looked round and saw four company columns just closing up to extend our left, when with a real cheer the whole of the enemy's line dashed forward, enveloping our left. One of our company columns deployed instantaneously, but the others, still hidden from sight of the coming danger by the rolling ground, halted, ordered arms together as on an inspection parade, and stood until the enemy's heads showed above the rise at not more than 100 paces, when they received them with rapid independent fire from the leading ranks only.

The attack was adjudged to have been repulsed, the firing which had raged between the lines at the unpleasantly close distance, for the new cartridges, of barely ten paces, was stopped by whistle and command, and the enemy were ordered to retire. In practice, of course, the victors would have pursued at once and driven the débris back right on to their remaining guns in rear; but as this was impossible in peace, the Emperor, who had that moment arrived on the spot, sounded the "cease fire," and the whole battle came to an end. My attention had been so completely engrossed with the matter immediately under my eyes that I have little idea of what occurred further to the left, only catching a momentary glimpse of a great cavalry charge far away in the distance and retaining a confused idea of long and endless lines of infantry backed by masses of closed battalions, presumably under cover, and further to the rear on either side long lines of artillery.

The fight being over, whilst the mounted officers were gathering for the critique, I walked on to find out why the companies on our left had received an infantry attack in column, and luckily found an acquaintance in one of them, who told me that the thing had been so sudden that they thought they had to deal with cavalry, and therefore stood

ready to form company squares. I was very much struck by one thing: A moment before the men had been moving with an order and precision beyond praise; every order was obeyed instantaneously, and one would have thought they had come fresh on parade, but actually these men were weary with four previous days' successive marching, on which they had never been under arms less than nine hours, and once over twelve, and how weary they were may be judged by the fact that within five minutes of the "cease fire" I counted in one company of 120 men 70 fast asleep on their knapsacks, lying with their faces to the sky. A better example of what a complete conquest the will can achieve over the body, when trained on the Prussian method, I could hardly have wished to see.

In the main, the other engagements followed the same course, and became monotonous from their very excellence. The whole thing worked automatically. The long columns evolved themselves into fighting order more like some living organism, always exactly adapting themselves to the conditions of the moment; nowhere a rigid adherence to forms, causing an excess of strength at one part, a deficiency at another, but everywhere, as one looked round, one felt the exact adaptation of means to an end.

It must not be supposed that this state of affairs has been reached without much trouble and difficulty; on the contrary, the full consequences involved in the fundamental conceptions of the new regulations—namely, individual training, delegation of responsibility, and the prohibition of the "normal attack formation"—have only been evolved by incessant friction.

The chief difficulties to be overcome were—first, the desire to monopolize power, common to all grades of ambitious and energetic men; and secondly, the general conviction that the scenes witnessed on the battle-fields of France (where, as admitted by the official historians of the war themselves, wild confusion in the fighting line was the chief characteristic), were the inevitable outcome of fighting under breech-loading fire, and not, as actually was the case, the direct

consequence of an equality of armament such as had never before existed in any campaign.

The former difficulty led a number of the captains, on whom increased power had now devolved both by custom and regulation, to hamper the initiative of their subordinates by endeavoring to keep the conduct of the fight too exclusively in their own hands, and was only conquered by the common sense of the majority after many years of experience. The latter difficulty led directly to the idea that the primary object of tactical formations was to lessen the chance of avoiding losses, and not, as it actually is, to insure the most rapid and complete extermination of the enemy.

This misconception did not long survive. Common sense again, derived from practical knowledge, soon killed it, and only a few cases occur now and again sporadically; but the "epidemic," as a German writer christened it, has long since passed away. Nevertheless, it led during the period of its prevalence to every conceivable system—even such absurdities as advancing on the enemy in file, or fours, and dotting the men about all over the ground at equal intervals all round—being duly tried and condemned; and would-be inventors of these and like tactical nostrums in this country would save themselves and the army much time and trouble if, before suggesting fresh fads, they would study the history of similar experiments in Germany.

But much friction yet remained to be overcome in combining the absolute obedience, the old conception of discipline, with the freedom it was held necessary to accord to the individual in the fighting line; while further confusion was caused by the use of the term "schütze"—i. e., skirmisher—to designate the units of which the fighting line consists.

Originally the "skirmisher" fought by his own individual judgment, stalking the enemy and utilizing every advantage of cover the ground afforded him. In the preliminary phases of an engagement such latitude of choice may freely be conceded to a few brave and specially selected men; but when once the attack has to be pushed home such deliberate action ceases to be possible, and the safety of the individual derived from skill in the choice of ground as cover

has to be sacrificed in the interests of the whole. The rapid infliction of overwhelming loss on the enemy then becomes the main point to be kept in view, and to this end it becomes necessary to place as many men in the front line as can use their rifles with effect—viz., about one man to the yard; and with such a dense line the choice of cover by the individual is necessarily an extremely limited one. Furthermore, since concentration of fire promises the most rapid and speedy results, a limit had to be placed on the skirmishers' right to choose when and at what to fire, and this last limitation destroyed the last vestige of skirmishing in its original acceptation.

A line of men, however, of the above density—viz., one man to the yard—cannot, in face of the enemy's fire, retain for long a sufficient power of offence. As the men fall it becomes weaker and weaker, and has to be supported by fresh troops from the rear. These, being sent in in similar order, have to find room by the side of those already in position or in the gaps made by the enemy's fire, and hence each successive reinforcement, however welcome, brings with it increased confusion in the fighting line. The question then arose, Is such confusion unavoidable? A very powerful party maintained that it was not, and that the way out of the difficulty lay in reverting to the traditions of the past and drilling the soldiers again to mechanical obedience and close order. Their views found their extreme expression in the well-known pamphlet entitled "The Midsummer-Night's Dream," which advocated most powerfully the adoption of a system of attack in lines of sections, each section about 70 strong, in single rank, shoulder to shoulder, close order, under the command of a commissioned officer. Their fire was to be as that of a machine, entirely under the control of one man, and as the inevitable casualties ensued in the fight, the section closed on its center, and made room for following sections to reinforce.

It is a point worthy of most careful attention on our part that these views found their warmest supporters precisely amongst those men who had survived the bloodiest slaughter of the whole war, and about the year 1882-83

found their fullest expression on the Tempelhof drill-ground at Berlin.

The avoidance of loss being the one horn of the dilemma, the reintroduction of mechanical discipline—the “massendressur” of the old days—was the order; and, at the risk of appearing tedious to those who have not followed the successive steps of the modern military evolution, I must dwell on it a little longer.

The old system of “mass” training implied the mental degradation of every man who passed through the ranks, and involved the impossibility of recruiting the cadres of the non-commissioned officers, for the selection of the right man for the right place became impracticable. Mass training—i. e., mechanical obedience—had proved itself, even when it reached its utmost development, as before the Jena catastrophe, and again in 1870, when it was less pronounced than in the previous period, a rotten reed to trust to. Individual training has its dangers, but it insures that every man who serves with the colors is improved as a citizen by the process, in so far as he is taught to act on his own responsibility, and guarantees to a certain extent that the non-commissioned officers are recruited from the best available men, by securing for each individual the opportunity of showing what is really in him, and not merely testing his ability to pass examinations on paper. As an extreme instance, I would adduce the well-known faculty of the Bengali Baboo to pass any paper test, and his absolute incapacity to bear actual personal responsibility where that responsibility entails the handling of men directly, even where the risk to life and limb involved is infinitesimal.

The framers of the new German regulation have managed to avoid both horns of the dilemma by combining the strong points of both extremes, and through it the army has been made what Scharnhorst wished it to be—a national university for the training of character and a means of preventing the evolution of a “literary proletariat”—to use Prince Bismarck’s words—which is the special danger to which all systems of free education are exposed.

The object of “free education” in Prussia has been overlooked in England. It was simply a bargain between

king and people, originated and practically carried through by Scharnhorst, the terms of which briefly were as follows:—The king—i. e., the country—requires intelligent, educated soldiers as a means to preserve the nation. The king—i. e., the country—will educate every one practically free of charge if, in return, the boys so educated, or their representatives, agree to serve as soldiers for a space of three years. The system of blind mechanical obedience, which drilled, or attempted to drill, the soul out of man, and which Scharnhorst did not live long enough to prevent, made the army, if not a burden to the country, at any rate a hindrance to its development, but was a fair set-off for the advantages conferred. The system the new regulation has initiated, far from acting as a hindrance to its commercial prosperity, gives to every man who undergoes it not only the trained habit of self-reliance, the basis of all business success, but eliminates one-half of that "literary proletariat" which, in Prince Bismarck's view, constituted so great a danger to the country; and if it withdraws from reproductive employment an average of 450,000 men per annum, it gives back not only more vigorous men, but, through the sanitary method of life, the hard outdoor exercise and fresh air, the better food and more healthy lodgings which the majority find in barracks, to say nothing of the moral habits of restraint a sensible discipline enforces, it extends each man's usefulness by five years at least, for each year they spend with the colors. Whether this deduction is or is not correct, let those who are feeling the pinch of German competition in trade answer. They felt it some years ago, when correspondence in these columns showed that want of power to act on their own responsibility was the one thing wanting to prevent their swamping the market for British clerks or managers. How much more will they feel it ten years hence, when the new regulation has been in force long enough to bring the men trained on the new principles into the labor market! Would it not be well for us now, whilst we still have time, to alter our system of military education, so that our discharged reserve men may be able to compete on equal terms with the horde threatening to overwhelm us?

III.

In my previous letters I have referred to the two main points in the German Regulations for Infantry—viz., the individual training of the soldier and the delegation of responsibility—and it will be at once apparent that some counter-check to the extreme consequences of either is necessary if the infantry fight of the future is not to degenerate into a scene of the wildest confusion, culminating in, as the Germans lugubriously term it, “Ein Begräbniss erster classe”—i. e., a funeral of the largest dimensions. This check is found in Section B, §§88, which practically applies to all grades in the hierarchy—namely, that the conclusion of the fight must find the command (in this case the section) in the right place with reference to the other units round it. Where this place is or will be cannot be laid down by regulations, but depends on circumstances; and, further, to prevent any possibility of a man or a leader trying to escape the consequences of action by inaction, he is reminded in Section C, §121, that delay or failure to act will always be judged as a worse error than a mistake in the method of action chosen.

In fact, what the new regulation does is, instead of degrading the soldier to the level of an unthinking machine, to place him, on the battle-field, on the level of general intelligence which the British law has long since accorded to the average civilian in case of a street row or riot—namely, to enforce on him the obligation to make up his own mind, and to act in what appears to him to be the best manner for preserving the public peace, and not merely to stand as a looker-on and send for the police. In dealing with civil riot, an officer and every man under him is placed in the same position—viz., he must use his own judgment in the choice of means, but cannot shelter himself behind a superior or the plea of obedience to or absence of orders.

With regard to the delegation of responsibility, it is to be noticed that, though the principle is asserted throughout, the amount to be accorded below the rank of the company commander varies with the circumstances. The captain's

full independence is decreed by regulation, and cannot be interfered with; but the captain must exercise his own judgment as to how much freedom he delegates to his subaltern, and the latter again does not let his group leaders out of hand if he can avoid it. This a moment's reflection will show to be a very necessary arrangement, for it is obvious it would not be advisable to allow a last-joined subaltern the same latitude of action that can be safely conceded to a senior lieutenant with eighteen years' service. Nor will the Germans at any price have the total splitting up and slowness of action entailed by the system of considering the "group" as the ultimate unit of tactics—a system which finds many advocates in our own and other services. When all his officers have fallen, a group leader must assert his direct authority, just as, when the group leaders are down, the soldier himself must use his own judgment, for which contingency he is carefully trained; but as long as his subaltern remains on his legs, the group leader only acts as his subordinate assistant, seeing that the orders given are obeyed, but not personally communicating them. Reflection will show this to be a very sound and common-sense arrangement, for, as long as a command can be heard, time is only lost by its repetition through intermediate links. It is no longer possible to handle a battalion by direct word of command under fire; instructions or orders must therefore be issued, but the section (i. e., subaltern's command) and the company must be kept in hand till the last moment possible.

This marks well the distinction between the German and the extreme open-order school. The latter say, "Confusion in the fighting line is ultimately inevitable, therefore let us go to meet it and start with confusion." Their opponents point out that, though ultimately inevitable, it is the work the enemy's bullets have to accomplish, and, therefore, to adopt it from the first is simply to save the enemy the needful expenditure of ammunition requisite to bring it about.

The concentrated will-power alone possible in close order in its highest form is to the attack what velocity is to the projectile. A projectile penetrates as far into an iron

plate or other obstacle as its *vis viva* (the product of its mass by the square of its velocity) will carry it. We might say that an attack penetrates just as far into and through that fire-swept zone which forms an advanced shield or protection for the defender as its mass multiplied by the square of its discipline will carry it. Voluntarily to give away the cohesion secured by discipline is about as sensible as trying to pierce an armor-plate with a charge of case or small shot.

The expression the "square of discipline" may appear fanciful, but a little consideration will show it is far nearer the truth than the use of the word "discipline" alone would be, for every increment in discipline tells in two ways—it enables you to bring a larger number of men up into the fighting line at closer range, and under better control, and their fire will, therefore, be all the more effective; but because their fire is more effective the enemy's power of inflicting loss on the firing and following lines is further diminished; the firing line can be trusted to hold out longer, and, therefore, the following lines may be held back at such a distance that they do not, at first, incur loss from the bullets exclusively meant for the lines in front of them.

In my first letter I said that this year's maneuvers marked the culmination of a cycle of a century's evolution, and I have step by step endeavored to explain my meaning. Actually, the line of demarcation is not so easy to define exactly. It is true that these are the first maneuvers in which all three-years contingents of the peace effective have undergone the same uniform training; but this does not apply to the reservists and landwehr, who, in time of war, will be called to the colors, nor, on the other hand, have the non-commissioned officers, still less the officers, had the advantage of working steadily on the same lines. Still further improvement, therefore, may be looked for in the future, for the old saying, "It is hard to teach an old dog new tricks," has much truth in it, and each successive step above indicated has met with opposition in each rank successively. But the evil is not so great as might be imagined, for, though the new system has only been, officially, three years in existence, practically it does but formulate in precise terms the

methods which have been more or less in fashion for the last ten; and the difference is mainly this, that, whereas formerly each company commander was working in fear and trembling of what new fad a superior might spring on him, now he can give his undivided attention to the work before him. Possibly this may be not so great an advantage in practice as it appears in theory, for, under the old conditions, a man learnt independence of judgment and was obliged to have confidence in his own opinion, and the fads of superiors preserved him from getting too much in a groove. In a certain German garrison I knew well, each battalion had to practice three separate and distinct formations for attack,—one for the regimental inspection, one for the brigadier, and a third for the divisional commander,—and I remember asking an old friend whether this state of affairs was not very injurious. He only laughed and said, "Well, in action no two cases are exactly similar, so, if we are sufficiently well trained to satisfy the requirements of the inspecting generals, we shall be all the more likely to adapt ourselves to the varying conditions of reality"—an optimistic way of looking at things, to be commended to our own officers suffering under similar adversities.

To come now to questions of equipment and their influence: The new German rifle, as everybody knows, is not correctly described as a "magazine" weapon, but rather as a "multiple" loader, and is to my mind the simplest and most practical military weapon yet put into the hands of any soldier. There is no "cut-off" to convert the magazine rifle to a single-loader, liable to jam from various causes, no necessity of recharging the magazine, and no possibility of finding it empty at a critical moment. The soldier simply opens the breech, thrusts in a little metal case containing five cartridges, and fires them in succession, having to work the breech-block to bring each cartridge into position in succession. The fifth time he draws back the block, the empty case is ejected, and another put in, so that no time is wasted in fumbling for single cartridges. Further, the arrangement of the expense-pouch—which, however, has been in use since 1872—offers practically the advantage of a maga-

zine. The pouch on the right-hand side is kept constantly full from the others, and its lid when open falls outwards, possessing herein a great advantage over all others that I know of. In fact, and as a practical arrangement, this gave to the old Mauser single-loader all the advantages of a magazine rifle, and enabled it to fire within the minute a greater number of rounds without the many disadvantages of the latter—such as empty magazine at the critical moment, etc. Indeed, I have often marvelled that, whilst we were willing to copy "pickelhaubes," badges of rank, etc., such a simple and practical point should have escaped our attention; still more, that with such a practical expedient ready to our hands, we should have wildly launched out into the expenditure of millions on a magazine rifle, which, as far as concerns the magazine, and with the existing pouch, is no better than the old rifle would have been with the Prussian pouch. Another practical point I noticed is the packing of these cartridges. Each little case of five cartridges is packed with two others in a cardboard packet closed by a strip of tape, which is pulled off by a jerk, and uncovers not only the cases, but holes cut out for the finger and thumb to grasp them by. The advantages of this simple arrangement are obvious: no time is lost in stowing away the separate cartridges, they can be thrown down in the shooting line without dust and grit sticking to the lubricant, the distribution of ammunition is rendered more easy, and also its collection from the wounded.

Fifteen of these packets go into a larger and stronger millboard box, which is closed in the same manner, and to which is further attached a piece of strong webbing, by which it can be readily lifted out of the ammunition-wagons, and two of them knotted together can be conveniently carried over the shoulders or by any sort of a stick, their joint weight being about 32 pounds and their contents 550 rounds, or 225 each. Five more of these boxes go into a regular ammunition-box, which can be readily opened and the contents tumbled out. The weight of the new cartridges is about three to two of the old ones, hence for the 100 rounds formerly carried the man now carries 150, which are distrib-

uted in the following manner: 30 rounds in each of the front pouches and 90 rounds in a separate pouch behind.

As regards the supply of ammunition in action, the fundamental idea is that you can never have too much of it, and therefore every opportunity must be utilized, before going into a fight, to serve out as much as the men can carry in their haversacks, pockets, etc.

On the defensive, of course, any amount of cartridges can be laid out in niches cut in the parapets or other protection, and whenever the offensive passes over into a passive condition, ammunition can be brought up from the wagons which follow the battalions into action as closely as possible, with greater or less trouble according as the way to them is more or less under cover. But when troops are once definitely committed to a decisive advance, I find that very little faith is put in any system of supply from the rear. It is all very simple in peace-time and on paper to send unarmed men backwards and forwards to the wagons, but it is quite another thing to expect men to do the work when the bullets are flying, and those who are brave enough to attempt it would be of more use in the fighting line. Again, the mere physical difficulty for a heavily laden man to overtake an advancing fighting line when the latter has perhaps 800 yards start out of a total distance to be traversed of 1,600 is in itself insuperable.

Most men with whom I talked over the question expressed a common-sense opinion that 150 rounds per man was enough for any one attack, and if this number is fired away without result, then what is wanted is fresh nerves for the firers, and these can only be supplied by fresh reinforcements. The long and the short of it is that practical men take every opportunity they can of completing this ammunition from the handiest source, and do not rely on any cut-and-dried regulations.

The greatest possible stress is laid on the maintenance of fire-discipline, but this is not well seen in the maneuvers, and can only really be judged on the shooting-ground, where the Germans now enjoy a great deal of practice. Still, even what I did see in the maneuvers left a very favorable impres-

sion as regards the complete control the officers exercised. The value of such discipline is based on the assumption that superiority of fire has always been the condition on which the successful advance with the bayonet ultimately turned. In the old days on equal fronts they (the Germans) sought to obtain this by exceptional rapidity of fire, due to better mechanical drilling. The French met this in 1806 with enveloping tactics and better marksmanship. In 1866 the Germans again obtained the desired result by mechanical improvement in the weapon, and in 1870 by using against the French the same tactics the latter had formerly so successfully used against them. But now all weapons are mechanically on an equality; both sides are equally alive to the advantage, where possible, of out-flanking tactics, and, on paper at least, equally skilled in marksmanship. The superiority will again have to be fought out on equal and parallel fronts. What further step forward can be made? The answer they have found is based on the idea of handling the fire of the sections as units, like the fire of a battery acting with others in brigade. The captain controls the fire of his three sections, as the officer commanding a brigade division of artillery controls the fire of his three batteries. He can order one section to hold the enemy in check along the whole of his front and with his other two converge a crushing superiority on any selected point of his enemy's line; but they do not allow this idea to descend lower in the scale, to the groups, as they consider the fire of ten or a dozen rifles too insignificant to exercise a decisive effect.

This may seem a counsel of perfection, an ideal to be striven for, indeed, but not to be attained on this side of the grave; but it must be admitted that the idea is sound, and, since it involves the co-operation of only three trained officers, more likely to succeed than the rival schemes in other countries, which hope to achieve a similar result through the co-operation of some twenty to thirty less responsible and less trained group leaders.

The introduction of smokeless powder has, however, rendered this ideal far more attainable than when it was first proposed, now some years ago. In the absence of the

smoke-screen on both sides, the company officers not only find it easier to work together, but can control their men and judge the effect of their fire on the enemy to a far greater degree than was formerly possible. From their point of view this increased power of control more than compensates the attack for the increased facility of concealment smokeless powder confers on the defence. It is true that the latter also profits by the same increased power of control, but they argue that, from the nature of things, the defence striving only to avoid being beaten, whereas the attack fights with the determination to win, the latter is in a position to make far better use of this new power than the former. Put in another form, it comes to this—the heavier and more accurate the fire whistling over a trench, the harder it is to make men raise their heads over it, to take steady aim. Smokeless powder makes it easier for the attack to deliver such a fire; hence the difficulties of the defence will be increased. Further, in the absence of smoke, men stationary on the defence cannot escape the depressing influence of the dead and wounded lying round them, but the attack leaves all these evidences of the fight behind it. So again the advantage is on its side.

Generally, it is held that the possibilities of concealment the new powder affords have been immensely overrated, and what I have personally seen during the past two years leads me to the same conclusion. If ordinary European short-service soldiers possessed the skill of the Red Indians as skirmishers, no doubt the advantage would be immense; but, as a fact, they do not, and neither in Germany nor in any other country have I ever experienced any difficulty in making out the enemy from the infantry fighting line. The ordinary spectator, looking at the progress of the battle generally, may often be in doubt as to where the enemy actually is, but the company officer in the front, with his attention fixed on the one hedgerow, edge of the wood, or whatever the point he is ordered to carry may be, will always find indications enough to guide his aim. Just as in stalking game it is chiefly a question of knowing where to look, and not the power of eyesight, that makes the differ-

ence between the experienced hand and the beginner, and, as in game-shooting, too, it is the movement of the animal that usually betrays its position, so also in the case of troops engaged it is the movement inseparable from the conduct of the fight that renders their concealment impossible.

One other point in connection with the new rifle remains to be noticed, and that is its extraordinary power of penetration. Stockades of 12-inch baulks are perforated with ease, even at extreme ranges, and even 30 inches of oak will be penetrated at 200 yards. Banks of earth 2 feet thick are no longer proof, and 18-inch brick walls are pierced through and through. Its power against this last description of cover will entirely revolutionize the tactics of the defence of villages and their influence as points of support on the battle-field; for the aid of artillery is no longer indispensable to breach any ordinary walls. At 400 yards a company of infantry firing volleys will cut down the wall of a house in a few rounds, and at 200 even a section of 70 men will do the same. This power will render the interior defence of all ordinary villages impracticable, for the attacking party can cut its way through partition walls without the necessity of having recourse to any of the old-fashioned methods, such as the explosion of dynamite or gun-cotton slabs against the walls—a service often of very great danger.

The reputation of the Germans for marching has stood high ever since the last war. In 1883 I was with a brigade which averaged 32 miles a day for three consecutive days; but though I cannot this time reduce the work done to precise figures of distance—for the mountainous nature of the ground and the greater distances traversed in fighting order across country would render such figures valueless—I can assert that, from my own observation and from what I learnt from the same officers who had been present on the occasion above alluded to, the work done was as hard again, for during the last week it was incessant and exactly as it would be in war. Taking the record of a single battalion, and one that got off rather cheaply, I find that on Monday, Tuesday, and Wednesday it was under arms on the march for eight

and a half hours exactly, and, further, had to supply the outposts on Wednesday. On the Thursday, Friday, and Saturday it bivouacked twice, fought in three long actions over difficult ground, and was under arms on each day for over twelve hours. Yet it marched back without one single case of sickness after five weeks' absence, and the company to which my informant belonged had not one single foot-sore man. On the Thursday night a whole division was bivouacked round and about Mühlhausen, and I went all round the camps with friends who could tell and show me everything, and I could not help being struck by the improvement in physique since the last time, eight years ago, that I had bivouacked with the same regiments. Of course, in point of measurements one can say nothing; figures show that an annual improvement is perceptible, but it is far too small to be visible to the naked eye. I could only judge by the cheeriness and capacity for bearing exertion. The work this year, as above stated, had been distinctly harder, but there were no signs of distress. On the former occasion the men in bivouac were very silent, no animal spirits about them, and later in the night, when it came on to rain, they crouched round the fires and sang bits of the "volkslieder" in a very subdued and melancholy fashion—they were thoroughly stale. And next day in marching one saw signs of great weariness and exhaustion in many faces. This time I did not see anything of the kind, either on the night in question, which happened to be fine, or on succeeding days after wet and cold nights had set in. The men sang round their fires, the bands played, and everything was as animated as a country fair. And though, as I stated in my last letter, when they got a rest next day, they lay down and slept right away, I saw nowhere that drawn, pinched look of extreme weariness that makes one's heart sorry for the poor sufferers.

Is this increased endurance a consequence of the new regulations or not? I think so, for endurance is far more a matter of mind than people think, and it seems to me that this cultivation of the individual will is already bearing fruit in a greater cheeriness and sense of manliness than was possible under the old régime.

IV.

Cavalry.

The causes already referred to in my first letter—viz., dispersal of troops in small garrisons, want of interest in tactical matters, the consequence of the reaction after the prolonged strain of the great wars with Napoleon, and the extreme financial exhaustion of the country which resulted therefrom—reacted even more prejudicially on the mounted arms of the service than on the infantry. In addition, these had special difficulties of their own to contend with, of which the most injurious were the want of an inspector-general of cavalry, and the false tactical traditions they inherited from the campaigns of the War of Liberation. Of course, there were not wanting many men who worked heart and soul for the good of this arm as for the others, and the system of short service, entailing on the squadron officers, as it necessarily did, the duty of mastering the practical part of their profession—i. e., the training of remounts, education of the recruit both as a soldier and as a horseman, and, above all things, the care of the horses and fitting of saddlery—guaranteed the country the possession of a thoroughly reliable body of junior leaders. But as long as the ultimate responsibility for the efficiency of the whole arm was dispersed on the shoulders of the corps and division commanders—most of whom were necessarily infantry officers—uniformity of training, the most essential condition of good maneuvering with cavalry, was unattainable.

It is not much to be wondered at, therefore, if the results obtained by the cavalry in 1866 left very much indeed to be desired; but the cause and its remedy were correctly appreciated, and the appointment of Prince Frederick Charles as inspector-general of cavalry in the autumn of that year marked the commencement of a new era.

The accumulated errors of sixty years of misdirected training cannot, however, be eliminated in one-twentieth of that time, and, great as was the progress effected under the Prince's guidance between 1866 and 1870, the cavalry were, as a body, far behind the level of efficiency demanded by the

altered conditions, both strategic and tactical, under which they were about to be employed.

The cavalry experts, as a body, were seriously disappointed by the small results obtained by the 70,000 and more horsemen that invaded France in 1870. But they were in no way disheartened, for the material, both men and horses, was proved to be excellent, and it was seen that all that was wanted was a sensible system to develop the best qualities of both, and at the same time to train the superior officers in the art of handling the higher units—namely, the brigades and divisions.

The defects of the old system were thus summed up by one of their first authorities on this subject:

"Our riding education keeps our horses during the whole of the winter, from October to April, in the *manège* or riding-school. Then follow the squadron training and regimental drills, also on level parade-grounds. Only during the short period of the detachment exercises and maneuvers, which last only four weeks, is it necessary for cavalry to ride straight across whatever comes first. Is it possible that the soldier can feel full confidence that his horse will carry him as long as he sits still and does not worry his mouth? Is it to be expected that he can keep his eyes on the enemy and his squadron leader? Is it not much more likely that he will be anxiously looking down at every stone and cart-rut on the ground, pulling at his horse's head, and thereby destroying the order of the formation? But how can a leader who has grown up in this groove feel confidence in the ability of the men following him to reach the enemy knee to knee, when he knows that every potato-field, every ridge and furrow loosens their order?"

To eliminate the defects indicated in the above passage has been the chief object kept in view by the cavalry reformers during the last twenty years, and the steps they have taken have been, briefly, as follows:

As far as possible, the time spent in the covered-in schools has been curtailed, and more importance has been attached to an outdoor training of the men to control their horses on all sorts of ground likely to be met with, while at

the same time largely increased demands have been made on the staying power of the horses, and a proper conception of what "condition" really implies has been arrived at.

This last is the essential point on which everything turns. As long as squadron commanders were judged by the fatness of their horses, as under the old régime, the keener and more ambitious they were, the more certain was the ultimate ruin of the whole arm, for it did not pay to show horses in fighting condition, and hence no man who wished to get on in his profession dare train his horses in the long gallops and fast work required by the altered conditions of warfare.

As soon, however, as this misconception had been removed, the practical knowledge acquired as a consequence of short service had full scope to assert itself, and the squadron commanders, being untrammelled in the exercise of their responsibility, soon evolved by competition a system of training which utilized every grain of corn and every hour of the day to the fullest extent possible.

By practical experience they found how to apportion the food of the horses to the work to be done, diminishing the ration in the winter and increasing it in the summer, when the exertion demanded was greater. And, further, each officer had to learn, on pain of rejection if he failed, how to exercise his power of demanding work and inflicting punishment in the best possible way. For, if he asked too much, both men and horses became stale, and if he failed to secure the willing obedience of his subordinates through the abuse of his power, the failure was made manifest by the absence of that cheerful alertness in the men that shows the squadron to be really in the hands of the commander, and without which maneuvering of the standard I have seen in Germany is impossible.

I consider this alertness—"appel" the Germans call it—the salient characteristic of their whole army, but more especially of their cavalry. Other cavalries may and do show bolder riders, firmer in the saddle, but in none that I have ever seen is there any approach to this extraordinary sympathy between the men and their leader. The squadron

moves literally as one man, obeying the slightest indication of its leader, and seemingly instinctively adapting itself to every variation of pace and direction, exactly as a first-rate orchestra obeys the baton of its conductor. Only those who know by practical experience the difficulties usually inseparable from any attempt to maneuver ten or twenty squadrons in which this union between leader and squadron has not been attained will appreciate fully all I mean to convey, but they, I think, will fully agree with me that without it such performances as I am about to describe would be practically unattainable.

The first encounter took place between the cavalries of the two armies in the vicinity of Mühlhausen, on the 17th of September. On this day the cavalry division of the XIth Corps issued from the mountainous district they had been marching through from Cassel and came in contact with the cavalry covering the IVth Corps advancing from Erfurt. Close to the village of Seebach I came upon a brigade of three regiments belonging to the latter force. Just as I reached them news of the enemy's approach came in, and the brigade moved off westward in rendezvous formation—that is, with the three regiments abreast, in line of squadron columns at close intervals. From where I stood the ground fell away to the north and west in gentle undulations; there were no fences or hedges, but in the trough of each undulation lay generally a running stream a couple of feet wide, flowing between boggy banks, a few pollard willows indicating its course. Here and there slight outcrops of rock and some patches of low scrub offered further impediments to progress.

Northward lay the town of Mühlhausen, out of which a chaussée, bordered with the usual avenue of poplars, ran almost due west along the crest of a long gentle spur that came down from the distant mountains, and amongst the trees on the chaussée I could detect, by their white cap covers, the enemy's patrols.

The brigade moved off down the slope and across the first of the hollows at a steady uniform trot, crossing the stream in the bottom without losing for a second its sharply

defined rectangular outline, every horse quiet and steady in its place, not a sign of that useless expenditure of force indicated by plunging, restive horses, which the passage of even the smallest obstacle usually entails. Then they brought up their left shoulders, and in the distance I saw a second brigade belonging to the same division converging on them. Presently they came within supporting distance of one another, and both wheeled up until they fronted northwards, their horse battery galloped out to the inner flank and unlimbered, and its first round was answered by the enemy's battery in position along the chaussée.

The two brigades had meanwhile continued their advance towards the enemy at the same uniform steady pace, their outline as sharply defined as the edges of the squares on a chess-board. But, on hearing the first shot, they opened out into line of squadron column at full interval, at the same time forming two lines in echelon, two-thirds of the whole strength being in the leading echelon.

Descending into another hollow, they were for a moment hidden from the defender's artillery, but beyond that their further advance would be in the full sweep of his shrapnel fire. They crossed the brook in the bottom with perfect steadiness, and then, taking advantage of the shelter the rise afforded them, they sounded "line to the front," and the moment this was completed, the "gallop," and swept over the brow of the hill in a well-closed-up line and in a long, stretching gallop. For the moment, as they descended into the last hollow between them and the enemy, I lost sight of them; but presently they reappeared dashing up the further slope at the fullest speed of their horses, but I noticed that the rear rank was no longer quite as well closed up as usual. The inner flank was almost on the road, it seemed to me, when suddenly the two outer squadrons went "troops left wheel," and the head of the column thus formed changed direction to the right. The rest of the first line, followed at a couple of hundred yards by the second one, dashed over the road ditches, and the whole disappeared behind the screen formed by the trees and into the valley beyond.

The last round of the guns had been delivered at 200 yards range; but the counter-charge, which was actually attempted, was masked from my view by the advancing lines. But less than a minute after the troops crossed the road I saw two regiments of white caps and their battery tearing up the slope of the hill beyond, above the line of the trees, and closely followed by three regiments of our own side. Then the "halt" suddenly sounded, the Emperor and staff appeared on the scene, and from all quarters the officers galloped up for the critique. I followed over the ground the charge had traversed, and in the hollow in front of the road came upon the cause of the unsteadiness in the rear rank noticed above. This was a broad drainage channel, about 12 feet wide and 5 feet deep, cut along the bottom, with slopes of 1 by 1—a sufficiently serious obstacle. The horses, by the marks of their feet, had mostly skated down the first 3 feet and then jumped the remainder clear. Further on I came to the reason for the break into column above alluded to. The road was here scarped out of the side of the hill, and there was a drop of about 13 feet into it. They had seen it only just in time, but, being perfectly in hand, had wheeled off sharp, and the tracks of the outermost horses were not 10 feet from the edge.

But down in the hollow beyond a still greater surprise awaited me, for here ran a stream of water some 6 feet broad, in a trench 40 feet wide from cutting line to cutting line, and at least 12 feet deep, a big "in and out," with running water where one would have wanted to take off. It would have scattered any ordinary hunting-field, but a battery and five regiments of cavalry in all had swept over it, without a single man down, at the fullest extended speed of their horses.

I was, unfortunately, unable to see any other of the charges equally closely, but on the following day I saw in the distance a charge by the whole cavalry division of the 11th Corps, which caught twelve batteries and a brigade of infantry of the 4th Corps in flank and rear, and, in the opinion of the umpires, exterminated both. On the third day, in the fight near Schlottheim, a similar charge was also made, though with less favorable results; and in the final battle of

the whole campaign, when the two corps united, under the command of the Emperor, attacked a marked enemy in the country north of Langensalza, Von der Planitz, with sixty squadrons, hurled himself on the right flank of the enemy, with results which secured the warmest approval of the Emperor.

I was a little nearer to this last charge, and the sight was one not readily to be forgotten—a long black wall, a mile or more in length, moving diagonally across the plain, eating up the ground like the swiftly advancing shadow of an eclipse. Presently, as it struck the enemy, it broke forward, like the surf of a breaker foaming over rocks, and then the dust rose and hid all subsequent movements from sight.

I afterwards learnt that this attack was meant, in the Napoleonic style, as an attempt to decide the action at any cost, and with this purpose the divisions were formed in four successive lines, and about 500 yards apart, so that the troops assailed had no time to recover from the confusion created by the first charge before another and another were upon them.

I was unable to ascertain exactly the distance covered in the three latter charges at full speed, but in the last case it was very considerable, at least 1,500 yards. In the first charge, cavalry *versus* cavalry, I was, however, able to plot the course almost exactly, and I found out that from where the brigade started at the trot to where the "gallop" sounded was 8,000 yards, and thence to the point the pursuing regiments had reached when the halt brought them to a stand was another 4,000 yards; and it is worth while noting that thirty years ago, in the days when fatness, not "condition," was the criterion of efficiency, 1,500 yards at the trot and 800 at the gallop was thought to be too much to ask of the horses—an ideal to be striven after, but hardly to be attained.

And these distances were covered, not by troops fresh out of barracks, but by horses which had already undergone five weeks of great exertion, which in the last week had exceeded anything asked of them during the 1870 war. A friend of mine who had been through the whole campaign said that hitherto he had always considered the days which

included the battles round Metz the hardest week's work of his life, but that the last six days of this autumn had made greater demands on both men and officers, and they had, of course, none of the excitement of actual war to keep them up. The patrols had been out and away at 2 a. m., riding often seventy miles at a stretch, and the regiments themselves were under arms for twelve to fourteen hours, and then had to take their turn of outpost duty, while they rarely found shelter at night for more than half the squadrons.

During the days immediately succeeding the maneuvers I had ample opportunity of studying the effects of this long-continued hard work on the horses, and was astounded to see how well they had stood it. They were looking thin certainly, and perhaps 5 per cent really required a few days' rest; but, as a body, they were perfectly fit to have continued at work. In some half-dozen squadrons that I was able to inspect more closely, and the horses of which I saw stripped, I found perhaps 2 per cent of slight sore-back cases, and about the same number of cases of debility; but I neither saw nor heard of a single horse suffering from the former that could not have been treated on the line of march, and ridden further.

Compared with what I remember to have seen after the maneuvers of 1874 and 1875, when the work done had not been nearly so hard, the contrast was most remarkable. Then I had seen squadrons come back into garrison almost as emaciated and weak as our own came back to Aldershot and Brighton after Egypt, and the general opinion of the officers I met agreed with mine.

The causes to which this improvement is to be traced are two—first, the increased knowledge of the care of horses, which, as above pointed out, has resulted from the substitution of a true standard of "condition" for the old fancy one, and the emulation due to the independence of the squadron leader; and, secondly, the immense improvement in the quality of the remounts supplied from the Government studs. Whether this is due to better management of these establishments or to changes in the stamp of sire supplied I am not prepared to say. Formerly Arab sires were almost exclusively employed, and the progeny of these with the East Prus-

sian mares gave a small but exceedingly enduring stamp of horse, which proved its value in the campaign of 1870. But of late, I am informed, English thoroughbred stallions have been very largely substituted, and the general opinion is strongly in their favor; and I also learnt that the English thoroughbred stock, bred and reared for a couple of generations in France, is considered to be superior for breeding purposes to sires directly imported from England.

Be this as it may, there can be no doubt that the modern Prussian stud-bred horse is a better type for cavalry purposes than any I have elsewhere seen. He has all the breeding of a good Australian, is better coupled and more compact, and is infinitely more hardy than the Walers we see in India. The absence of sore backs cannot, I take it, be attributed either to better riding or better saddles. On the former point little need be said. The Germans cannot afford to pick their men, and the men do not take as naturally to the saddle as ours. But the matter of the saddles deserves attention, for it is the only one in which the Germans seem to be going backward. For years the Cuirassiers and Lancers rode in the Danish saddle, the Hussars and Dragoons in the Hungarian. Of the former I have no practical experience; it was quite as heavy and generally objectionable as our own. But the Hungarian saddle, reduced to its simplest form, is the best and simplest type that hitherto has been, or can be, devised. It consisted only of two wooden side-bars, united near the extremities by strong front and back arches, connected by a stout piece of webbing laced down to the side-bars. The horse's blanket, folded in more or less folds, according to the animal's condition, was first placed on the back, the saddle girthed on, and the man's blanket or sheepskin thrown over the whole and secured by a surcingle. Ordinary wallets in front and a rolled coat behind completed the equipment, and the absolute dead weight carried was reduced to a minimum. Year by year, however, the original idea of the saddle was lost sight of, and it came to be regarded merely as a convenient peg on which to hang kit, which would have been better left in the squadron wagons. The wallets became larger, and two large leather pockets,

in which a whole change of clothing is stowed, and on which the rider actually sits, were placed over the tree, till at length the weight carried has come to exceed even our own marching-order limit; and now, instead of going back to the original idea, a new saddle very similar to ours, with stuffed panels, has been issued for trial, which is, without kit, as heavy as the one we are trying to do away with, and seems to me to possess all the disadvantages with which we are so well acquainted.

The saddle did not appear popular with the men, but I could trace no sore backs to it. Therefore it appears clear to me that, since all three saddles are in their present state defective, and yet the proportion of sore backs is almost infinitesimal, the prevalence of this infirmity in other services is far more due to want of condition than to the saddle itself.

V.

The Artillery.

The war of 1870-71 overtook the Prussian artillery at the commencement of its reformation. Its leaders were united as to the employment of great masses of guns and the concentration of their fire against individual objects. But the time at their disposal had been altogether too short to admit of the practical detail on which such combined action depends being adequately worked out. Hence, though the form was frequently attained, the spirit was often missing, and in those instances in which the fire of many batteries was combined on one objective it was as often as not due to the trained tactical common-sense of the battery commanders leading them to select the same targets, and not to any pre-arranged system of co-operation originated by the superior authorities. "Fire discipline" and "ranging" were then, too, in their infancy. A school of gunnery on the lines of our Okehampton establishment had been founded about three years before, the expenses of which, Prince Hohenlohe tells us, had been met by private subscription amongst the artillery officers, but it had not been in operation long enough to supply even one trained

officer per three batteries, and exclusively affected the Prussian batteries, those of the other States being still in an exceedingly backward condition.

It is not much to be wondered at, therefore, if on many occasions the effect of the German artillery fire appeared to such capable judges as the late General Sheridan, U. S. A., exceedingly small in proportion to the number of batteries engaged. To imagine, however, that these results can be taken as a guide for the effect of artillery fire in the next campaign would be a terrible mistake to make. For, apart from the technical improvements in the arm, which alone render it, at a low estimate, five times more effective in man-killing power than it was then, we now have to count on batteries every one of which has received a uniform training many times superior to what was then possible, and all these batteries have been trained to work together by practice on the ranges and in the manœuvres.

I regret that I am unable to state at first hand the results of the range practices. The Germans lay great importance on preserving absolute secrecy about them, and I have always been asked to withdraw before practice commenced, as my presence would compromise my hosts. As rough guides to forming an opinion as to the progress made, it may be useful to note that four minutes is considered ample for ranging with the double-wall percussion shell, a very effective man-killing projectile, and it is said that two minutes more is always sufficient to change to shrapnel and time-fuse. On the subject of the high-explosive shells the strictest reticence is observed; all I know is that they have been in regular use for some years, and have stood satisfactorily all tests as to durability in store, safety in the limbers, etc. As regards the accuracy of the practice, certain rumors were current in England last summer that in this respect much was still desirable. I endeavored to ascertain the truth of these rumors, and came to the conclusion that they were without foundation; that, on the contrary, the men were taught a uniform system of laying, and that with every year the results were improving. What probably gave rise to the idea was that the targets and conditions of

practice were being made more and more difficult and more in accordance with the necessities of war service.

Great as is the importance German gunners attach to accurate shooting, they are fully aware that the best shooting in the world is of little avail unless the batteries possess sufficient mobility to insure their coming into action at the right time in the right place; and the progress made in this direction since 1870 is very great indeed. On this point what I saw at the maneuvers enables me to speak at first hand.

In my previous letter, describing the cavalry encounter at Mühlhausen, I called attention to a horse battery clearing a running stream some 6 feet wide, at the bottom of a cutting some 13 feet deep, and, though no other instance of quite so startling a nature came under my eyes, yet I saw enough to convince me that this particular battery was in no way more efficient than the remainder of the horse artillery, and that the field batteries ran them very close as regards mobility. These latter make far more use of the gallop than is the custom in other services, and simply excel in long advances in line at full speed. The same "thrusting" idea is as much a characteristic of this arm as it is of the other two. The lasting impression the maneuvers left on my mind in this respect was that, though the batteries never disdained cover where cover was compatible with good fire-effect, they never hugged it, but always sought to unlimber within the limit of rapidly effective range, like the infantry, on the ground that the surest way to diminish one's own loss is to inflict heavier and more rapid injury on the enemy.

On one occasion I was fortunate enough to see at close quarters an excellent example of these long advances. Some six batteries, as nearly as I could count them, had formed line under cover, at the edge of a plateau swept by the enemy's fire. Whilst they were forming, a very small party of staff officers selected their alignment some 1,200 yards to the front, and sent word back to the batteries to advance. This they did, at the fullest extended speed of their horses, in line, their dressing nearly perfect. A small hollow road lay across their path, and one or two awkward drainage

channels, but these were crossed without disorder, and the guns reached their allotted position without overcrowding appreciably, halted, unlimbered, and opened fire simultaneously. This was the only instance in which I was sufficiently close at hand to judge the driving and drill, both of which were excellent, but on two other occasions I saw in the distance similar long advances at speed made by several batteries united. There was no rigid adherence to rule in this maneuvering in the larger units, and wherever the ground permitted the batteries found their way into their positions individually by the shortest line and the best way they could.

In action no special rule seemed to govern the position of the wagons; sometimes I saw them formed in column immediately behind the outer flanks of the battery, but more generally those of the first line were brought up, one in rear of the interval between each pair of guns, and at some 60 to 80 yards distance, and the ammunition served out direct from them, and not from the limbers, which were always, when possible, withdrawn under cover.

The fire-discipline in moments of tactical importance when rapid fire was called for was excellent, and the guns were served with a smartness almost equal to what I have seen on the gun-deck of the *Excellent*, and nowhere else. During the long periods of preparation and of the artillery duel, when shortness of ammunition supply compels the fire to be merely indicated by an occasional round, it is almost needless to say, this high tension was relaxed, but even then each gun was properly laid before being fired, and never once did I see any of the fictitious smartness so dear to the old school of general officers, which consisted in galloping up with loaded guns and firing the first round almost before the trail touched the ground.

The number of roads generally available and the comparatively small number of troops engaged rendered it unnecessary to call on the artillery for any long movements in columns of route at the trot. At any rate, there were no cases of ten and fifteen miles being covered on end at that speed. The preparation of the horses for such distances,

and even longer ones, has, however, been by no means neglected, and the arm is in a position to satisfy even greater demands than were made on it in this respect in 1870.

In those days the idea that such long marches at a high rate of speed were absolutely necessary to insure the timely formation of the great artillery lines was still new, even in Prussia, and unknown in the smaller States. Further, the small number of guns horsed in peace, only four per battery, necessarily prevented a uniform condition of training in the horses, the time between the declaration of the war and the first engagements being altogether too short to admit of its attainment. The "cult of the fat horse," too, was as rife and as prejudicial here as it was in the cavalry, and the horses themselves were of an inferior stamp to those which, thanks to the money sunk years ago in the Government studs, are now available.

All these drawbacks have since been minimized, if not altogether swept away. The horses, though still looking very light for draught purposes, are well bred and possess great endurance. Six guns and a variable number of wagons being fully horsed, fewer augmentation horses are required on mobilization than formerly, and a battery commander who dared to show his horses in the old-fashioned condition of sleekness would certainly be relieved of his responsibilities next morning.

It is important, too, to note that the system of pole draught is still adhered to. It is admitted that, theoretically, where sufficiently powerful wheelers are available, shaft draught may be preferable, but, practically, it is held that in action the advantage of being able to interchange the horses from the wheel to lead or center rapidly is of far greater importance, whilst, as a fact, pole draught gives as high a degree of mobility as is required. I wish to draw no comparison between our own and the German artillery in this respect; but it is worth while remembering that our old Indian artillery also adhered to the pole draught, which had been tested in action times innumerable, and were fully equal in rapidity of movement over difficult ground to their comrades of the Royal Horse Artillery, and, further, that

the shaft draught has never been tested under conditions at all approaching those of a modern engagement since its introduction.

With reference to the question of the use of smokeless powder by the artillery, I found the general idea to be that it was all a gain to the side which thought more of killing its enemy than of avoiding being killed itself. It enormously facilitates the maintenance of fire-discipline within the battery, permits of continuous fire even at the most rapid rate, for no smoke interferes with the laying, and above all things cheers the hearts of the men by enabling them to see the results of their fire. As a means of concealment it is of no value at all, for, even at extreme ranges of 5,000 yards and upwards, the flash of discharge is always distinctly visible, and at fighting ranges the flash enables one to note exactly the position of the enemy's gun, which was not always possible with the old powder, for the smoke obscured the object, and prevented one's picking up an exact point to aim at. Indirect laying may, indeed, be resorted to, and then the concealment would be perfect, but I found it little in favor, and the new howitzers are expected to deal with it when it occurs. As regards the co-operation of the artillery with the infantry, nothing was left to be desired. One common instinct seemed to guide the two. In the earlier stages of an action the infantry always waited for the guns to do their work, and during this period the infantry were almost invisible on either side—nothing but long lines of batteries were to be seen by the spectator trying to take in the general situation. Once, however, the infantry commenced their attack and it was the guns that waited on them. Never once did I see an occasion on which the support of artillery was called for, without it being already at hand, either in action or moving up. If their fire was called for, the artillery shirked no losses to render it effective, and crowded the guns together at even less than half interval, to bring the maximum possible number to bear; and with the same object in view they fired over each other, and over the infantry, up to the last moment possible.

The General Staff.

The General Staff of the German Army is too wide a theme to discuss here. All that space permits me to do is to point out the principal causes which have led to its efficiency. It is a point of honor in the regiments concerned only to submit the names of such officers for examination to the corps commanders as are likely to make thoroughly sound staff officers, and be a credit to the regiments themselves. The officers thus selected undergo an examination carefully framed to elicit what the candidate does know, and whether he can really think, or is merely gifted with a retentive memory. The best men are then selected by the chief of the general staff himself. The principle, therefore, is selective, not competitive. The fortunate candidates then attend the "Kriegs Akademie," or Staff College, for three years, during which they pass through a course of practical training which differs from that in vogue in other countries much as the education of a man who wishes to become a senior wrangler differs from that of an engineer—the former devoting himself specially to pure mathematics, ignoring friction and the strength of materials in his calculations; the latter knowing that to him these are the very essence of his practical success. What friction and strength of materials are to the engineer, knowledge of men and all that relates to their care, movement, and supply is to the staff officer; and to prevent his losing touch with the men and degenerating into an office man or pedant, each officer who eventually secures appointment has to return to the troops for two or more years after each tour of staff duty.

Office work throughout the whole army being decentralized to the utmost extent possible, a staff officer has time to devote himself to the practical side of his business, and as a consequence a very high degree of excellence has been attained in all that relates to the combatant duties of the staff, and of these the writing of orders for tactical purposes stands first. I have had many opportunities of examining these, both on this and on previous occasions, and what cannot fail to strike one about them is their businesslike precision. Never a word *too* much, and rarely one that

could be altered with advantage, and never is the sphere of command of the next grade of the order interfered with. The quickness and rapidity with which they are given is equally noteworthy. Where the ordinary staff officer, accustomed only to the formulas of "The troops will parade for divine service as follows," or "A district court-martial will assemble," etc., would require to return to his quarters and refer to the text-books, laid aside since he passed his last examination, the German staff officer will receive his outpost reports, and on the strength of them dictate his orders for his chief's signature from the saddle.

The test put on them this year is admitted to have been the most severe ever yet exacted of them in peace-time, for in no previous maneuvers have the conditions approached those of active service more closely. Beyond fixing the district in which the operations were to take place, there was no rearrangement whatever, but every night the orders were issued on the basis of the outpost reports received, the umpire staff only introducing reports of imaginary events necessary to keep them within the limits of the ground. The reports were rarely all in before midnight, and hence the divisions only received their orders between 1 and 2 a.m., the brigades perhaps an hour later. Obviously complaints would have been numerous had not each staff been thoroughly up to its work. Such complaints, however, did not occur, and since the divisions worked like clockwork together, it is pretty evident that there was no cause for them.

No maneuvers, however great the latitude allowed to commanders, or however extended the area of ground available, are of any real value unless the duties of the umpire staff are thoroughly well performed; hence the greatest care is exercised in the selection of officers for this purpose, and the Emperor himself officiated as chief umpire. Of the less exalted members of this branch I can only say that they were always on the spot when required, and their decisions were clear and at once obeyed. Of the chief umpire's critiques, of course, I can only speak from hearsay, but I had many opportunities of hearing them discussed by competent

men of considerable rank, and they were universally considered to have been admirable— even the beaten side admitted it.

In no instance was there any possibility for suspecting prearrangements. The Emperor dealt with the things as they happened from the saddle, and so immediately after the event itself that there could be no question as to the originality of the opinions he expressed. The impression produced on the two corps which maneuvered before him was excellent—for these had not previously been inspected by him—and, needless to say, there had been many an anxious doubt expressed, even by men in high position, in strictest confidence of course, as to whether this exceedingly young leader, who had never seen a shot fired in anger, was really a serious and capable judge of tactics or not; but that he is both, his conduct of the recent maneuvers has settled beyond dispute.

In the foregoing columns I have endeavored to present as clear a picture as possible of the progress made by the three arms since 1870. Limits of space alone have compelled me to pass over the equal advance made in the subsidiary services, the engineers, the railway battalions and fortress troops, telegraphs, supply, and sanitary services; and in making the comparison it must be remembered that the efficiency of an army as a whole is the product of the efficiency of all the above factors, and not merely their sum, for all are so closely interwoven, and touch each other at so many different points, that failure in one may entail the collapse of the whole.

In 1870 the German Army was still a very heterogeneous assemblage of units; now it is a homogeneous one. Then not one single arm was really on a level with the requirements of the arms then in use: the infantry were markedly inferior to their enemy in armament, and had not discovered the true secret of discipline—viz., the individual education of the soldier; the cavalry was still in a backward condition—they neither knew the limits of the endurance of their horses, nor were they trained to move in the larger bodies, such as brigades and divisions, and, worst of

all, they were still under the influence of the old Napoleonic dogma that "cavalry cannot charge unshaken infantry"; the artillery, though they were better armed than their adversary, had only grasped the idea which was to guide their employment, and had not mastered the details; and, finally, the staff as a body was only really efficient in its highest ranks. Now all this is changed: the infantry are equally well armed, and have tapped a new source of strength no other nation has yet discovered; the cavalry know what they can do as regards endurance, and have learnt by experience that the question whether infantry are unshaken or not can only be decided by the event, not judged by appearances, and they know now how to report and whom to report to; the artillery can now rely on executing what was formerly only a pious wish on the part of their leaders; and the excellence of the staff has had time to penetrate even into the lowest grades of the institution.

As the German Army now stands, I believe it to be the most perfect engine of war ever yet put together. The parts are better balanced; the material in its ultimate molecules, the men, is better; each man is thoroughly forged, and the friction in the moving parts, thanks to the staff, is reduced to as low a limit as is possible as long as human nature remains what it is.

The question only remains, Why has it been possible to produce these results in Germany alone? For, with a considerable knowledge of the other armies of Europe, I assert that it nowhere else exists. And the only answer I can find is this: The German Army is exactly suitable to the conditions of its environment. No copy of it can ever be the same, for the same conditions nowhere else exist. These conditions are—first, an extraordinary sense of duty to the country in all ranks, the lesson taught them by the events of 1806, and exceedingly well learnt; secondly, an aristocracy sufficient in number to supply a nearly homogeneous class of junior officers from men born to command; thirdly, the possibility, due to the existence of this aristocracy, of delegating responsibility to all ranks, which insures the existence of practical soldiers, thoroughly acquainted

with every detail of their service—the first guarantee for excellence in the staff, and the most thorough check conceivable on the propagation of faddists; fourthly and last, the entire absence of cliques amongst the officers, and their thorough loyalty and confidence in the fairness and military judgment of the "War Lord."

The last is the most important of all, and it must be admitted that the danger three years ago was very imminent, for, if confidence in the capacity and justice of the Emperor were once shaken, the keystone on which the whole structure depends would be withdrawn. Favoritism and self-interest would then have crept in, and with them would have vanished the very conception of duty for duty's sake. This point can never be too frequently reiterated. Within the limits prescribed by the material of which the Army is built up, efficiency depends absolutely on the strength of the sentiment of loyalty amongst the officers to the Crown; for the work demanded of them can never be obtained for money, even if nations were prepared to pay the market value of the officers' services.

Civilians may demur to this reasoning, but let them try the work and see. They may argue that our great railways obtain the best that men can give them for their services, and at the market rate; but they forget that the railway is always, so to speak, on active service, and men are dealing with conditions as they actually are, and not training to meet emergencies which may never arise within their own lifetime. Imagine the Northwestern Railway running only three trains a day out of Euston, but maintaining half its present staff and passing them on to a reserve, on the chance that some day they would suddenly be called on to deal with a traffic equal to that of August. Would they be able to get the same work out of their men that they now do? I fancy not; for practical men paid at a practical rate would take a common-sense view of the matter, and decline to overwork themselves accordingly. What cannot be effected by practical common-sense can be carried through by sentiment, and in peace-time the only sentiment which can be relied on to unite men in one aim is loyalty to the Crown.

MARCHING THROUGH THURINGIA.

Perhaps the pleasantest part of the whole period of the maneuvers was the march home through the Thuringian Forest. I was offered, and accepted, a horse and quarters if I would join a squadron and accompany them on their homeward march. Of course I was warned that my quarters were not likely to be equal to those in the best hotels, and that I must expect to rough it, but I thought I had had as much experience under that head as most men, and was not at all appalled at the prospect, and willingly agreed to come with them. We marched on the morning of the Monday following the close of the active operations from Sonneborn, a little place near Gotha, where the squadron had lain over Sunday. I had gone out to join them over night, and came in for a village ball given to the men by the inhabitants, and in its way it was about the most amusing thing I ever saw. I may mention that nearly every village in these parts has a large public hall for dancing or music, and in proportion to the size of the villages and apparent well-to-doness of the inhabitants, these rooms are really excellent, many of them with first-rate boarded floors, good enough for any dancers, and the one in which was the dance I am about to describe was very spacious, capable of holding 200 couples with ease. We ourselves had tumbled on excellent quarters with an old Hanoverian baron, who, when he heard that an Englishman who spoke German was going to march with the party next day, had at once sent in a carriage and a pressing invitation to come out and join them at once, and he received me with the kindest and most courteous hospitality, and after supper we all went down to see the ball-room. It was pretty well crammed, every peasant within reach, and of course all the women, having come in for the fun. The latter all wore their costumes, and as the stamp of features which characterizes the district, though not exactly pretty, is good, honest, and above all things healthy, the effect of the whole was most excellent. The squadron commander said he really must present his squadron properly to his host and me, and so called his sergeant-major,

who, of course, was master of the ceremonies, and ordered a "kaiser parade," an order which was received with much cheering and applause. The squadron took their partners and formed up for marching past, two couples abreast, the band played their "walk-past," and the whole then ranked past in "parade marsch," the men saluting and the girls kissing their hands; this last was *de rigueur*, and was the greatest fun imaginable, the girls giggling and blushing, and some hiding their faces with confusion when the critical moment approached, but it all went off in the best manner, and I did not see a single bold or vulgar-looking girl in the room. Then they trotted and cantered past, the last being done by a "chassée" step, and when they reached the further wheeling-point, they walked off down the room, forming a "mélée"; then the "rally" was sounded, they re-formed in line across the room, and then, the captain taking the stout young landlady as his partner, the whole advanced in review order, halted, saluted or kissed hands according to sex, and the whole broke up into a waltzing mass amidst roars of applause. Nothing could have gone off with more spirit or laughter, and nowhere could one see officers, non-commissioned officers, and men on better terms with one another. To say the German discipline is soul-killing, degrading, etc., is a most ridiculous libel. I can speak with some experience now, and can only reiterate that nowhere have I seen more universal mutual kindness between the ranks than everywhere in Germany where I have been. After this we withdrew for a bit, and nearly came in for witnessing about the only sort of misconduct that ever upsets the German soldier—not drunkenness, I am happy to say, but the inevitable consequence of the female preference for uniform to plain clothes. A number of the young village dogs felt aggrieved at the undisguised admiration their young women bestowed on the dragoons, and the consequence was very near being a genuine street row. However, the non-commissioned officers and village police stepped in, the latter running the plain-clothes contingent in very promptly, reminding them that their conduct was most impolite to the soldiers, who were the guests of the village, and the crowd

was broken up without serious consequences. No notice was afterwards taken of the affair by either police or the soldiers, and the matter quietly dropped. Human nature is much the same everywhere, and the cause is as old as the hills.

Next morning we marched to a little village at the foot of the mountains, the men so overladen with good things given them by their hosts of the night before that they were eating all the way, and probably they had a good deal of lost time to make up, as the work had been so hard the previous week, fourteen to sixteen hours under arms, if not all the time in the saddle, and the country so overcrowded with men that they must have got considerably in arrears with their food supply. I know I had myself done so. Our new quarters were in a large, straggling, and very primitive village, and there was abundance of room for the men—so much so that many houses got off with no soldiers at all, whilst the others only received two or three apiece, and the people (not all of them, but still some who had no soldiers to entertain) came and complained that they had been exempted. "Last time," they said, "that troops came through, we had some to look after, and we treated them well; what have we done that we should be forgotten this time? We have boys in the army too, and would like to return the kindness they say they have elsewhere received. It is our duty and we like it." And looking at their faces, there could be no doubt as to the genuineness of their wish, for these villagers are as straight as they make them, and speak the truth without any circumlocution. My friend and I found quarters at the village schoolmaster's, an old soldier of 1870, wounded twice at Wörth and once on the Loire; he was an exceedingly interesting, well-informed man, and the books in his room showed a very high standard of culture, political and literary. His hospitality was boundless, and he honestly gave the best the place afforded, and it was very good indeed; and next morning he refused to accept a brass farthing, even the Government allowance to which he was entitled, for one of us. Next day's march was a glorious one, over a mountain ridge rising 3,500 feet above our starting-

point. First we passed through magnificent beech forests, the trees growing straight up some 80 feet without a branch, and running some 2 feet 6 inches in diameter. Then we got among the pines, and into an atmosphere like an October morning at Simla; indeed, the big pines reminded one so of the deodars that I almost fancied myself back there again, and found myself wondering what I should do when I arrived. We were marching by the road which Luther took when he returned from Worms, and half way we passed near a stone set up to mark the spot where he was waylaid and carried a prisoner to the Wartburg near Eisenach, a few miles north of our path. We halted here for breakfast, and as we had part of the band with us, it played to us for a bit, and then those who wished were allowed to go and look at the monument, about which all seemed interested. Again the men were so overladen with good things that the halt had to be prolonged to give them a chance of getting through them all, and when at length we moved on, I never saw men look more thoroughly happy and contented.

We passed by some lovely old castles, and at Altenstein one of the subalterns took me to see a hunting-lodge of the Duke of Weimar, and a lovelier spot I have seldom seen, not the least attractive point about it being the exquisite turf and lawns by which it was surrounded, a thing the absence of which spoils, as a rule, the best of German country houses; but the secret of this was, I learnt, a Scotch gardener. From here we descended an almost precipitous slope, with gray rock cropping out through breaks in the forest, by a most perfectly graded and maintained road; indeed, throughout the march I was struck by the excellence and ingenuity of their road engineers, and I wished the idiot who laid out the Murree-Pindi cart road had previously studied under one of their number; much needless suffering to "tonga" ponies and the poor old "byles" might thereby have been spared, and the sum of animal misery largely diminished. Our next quarters looked at first forbidding, but again we fell on our feet, for we found on our arrival an invitation to lunch and dinner at the house of a gentleman in the neighborhood, and on my friend riding on to explain

my presence, he found his host's wife was an Irish lady, who sent me the warmest welcome. Our host, though a native of the district, had been in the Austrian service for some years, and remembered an old friend of mine, Colonel Neville, of Hyderabad, very well. The former had left the Austrian service in 1860, and afterwards held a high position at the court at Meiningen. In 1870 he had gone to the war as a "Johanniter" to look after the wounded and had then been appointed as préfet to one of the occupied districts of France, and as an instance of the mildness and tact with which in some places the conquerors ruled, I may mention that during the year or more he held office, not one single Frenchman was arrested by the police or otherwise harassed for political reasons; of course, the average number of criminals had to be dealt with, but the French looked after them by their own tribunals. But his reminiscences of the Austrian cavalry were to me the most interesting, and he told me that, excellent as the old Austrian cavalry were in all drills and movements, the improvement in the Prussian and German cavalries has put the latter far ahead of the former in all-round efficiency. The old Austrian cavalry, it will be remembered, maneuvered without squadron intervals, with all officers in the ranks, had no "base" in our sense of the word, and it answered admirably; yet he considered the German system of dressing from the troop leaders (equally without a "base") to be far better adapted to present requirements.

Next day I left the squadron to pay a visit by rail to Eisenach, intending to rejoin it the following day by the same means of communication. I found an excellent hotel, and being favored by weather, enjoyed my trip amazingly. To people who want to find a pleasant and economical summer retreat whilst home on furlough in England, I cannot do better than recommend either Eisenach itself or some of the numerous mineral watering-places in its vicinity. Of these I visited Fredericksroda and Liebenstein, two beautifully situated places with springs warranted to cure anything; the accommodation is equal to the best in Homburg or Wiesbaden, the sanitary arrangements thoroughly sound, and the prices just about half what one has to pay in these

more fashionable places. At Eisenach itself I found a really excellent "kuranstatt," newly built, large and roomy, furnished as civilized places should be, which is by no means always the case even in such well-known places as those above mentioned, and situated in such exquisite scenery, mountains, castles, rocks, forests, etc., that one could hardly desire more. As for the historic and legendary interest of the country, it is wide enough to meet all tastes, from those who wish to see the room where Luther translated the Bible to those who prefer expeditions to the Venusberg in search of the enchanted cave that Tannhäuser wearied of. The mention of the last-named place need cause mothers no anxiety, for if the goddess ever did live there, she has left little trace of her loveliness on the inhabitants.

When I rejoined the squadron next day, which for them had been a day of rest, I found my quarters fixed at a neighboring château which belonged to a "graf," a soldier of course. The house was full for a shooting-party, but they would not hear of my going to the village inn, but took me in with almost Arab hospitality. At dinner I met an old general, who for many years had been in the historic section of the general staff, and who is at present engaged in further researches into the Waterloo campaign. From him I learnt a great deal in confirmation of the views as to the evolution of the German Army that I have endeavored to bring out in these columns, more particularly with regard to the gradual growth of the independence of the company leader. As with us, in the days when the purchase system originated, the captains had been fully responsible for the administration and fighting training of their companies, but the introduction of battalion line tactics had disestablished them. The battalion was told off on parade into eight or more divisions, irrespective of the strength or number of the companies, and the captains no longer necessarily commanded the same men as they did when in quarters. The consequence was that all responsibility for the fighting efficiency passed into the hands of the colonel and sergeant-major. What broke this system, which still partially obtains with us, was the introduction of short service, which, by inundating the battalion with

recruits, rendered the old plan of training them by specialists i. e., adjutants, riding-masters for the cavalry, etc.—absolutely unworkable, and the captains had again to be called on to do their share of the work. This entailed on them the obligation of learning themselves in order to teach others, and it was this system which gave to Germany the number of sound common-sense, practical regimental officers who form the strength of her army, and whose absence in our own army Lord Wolseley is so constantly deplored. Why not, therefore, extend the same system in our own service? The example of the 19th Hussars proves its adaptability to our conditions.

Our party comprised several ladies, and when, after dinner, it turned out that the stranger within their gates was not unsympathetic to German music, we had a very good time indeed, and eventually fell back on the old collection of German "volkslieder," and sang it through from cover to cover. Next morning the inmates of the château and of the village, the female sex predominating, turned out to see us off, and we marched away, our band playing the German equivalent of "The Girl I Left Behind Me," which, on the whole, if less rollicking in tone, is more sentimental and better adapted to the circumstances.

I may here mention a custom of the German service that struck me as peculiarly pleasant and soldierly. Every morning when the captain rode down to take over the squadron, he greeted them with "Good morning, Dragoons," to which they all replied with a shout, "Good morning, Herr Rittmeister." The same custom applies in all superior grades, and in addition to the kindness of sentiment it expresses, it has a distinct practical value in enabling one to gauge the men's feelings. There is all the difference in the world between the response evoked by a good man whose men are cheery and contented, and the perfunctory, by-order sort of answer an unpopular man receives.

This was my last day's march with the squadron, for it was to bring us to Fulda, on the main line back to England, and it was a day I shall not readily forget. The weather was glorious and the country enchanting, and the men in even

better spirits than before, and they sang their good old soldierly songs with a will that went to one's heart. I had got quite attached to them, and felt quite sorry to leave them. Their straightforward independence of character, and the way they looked you straight in the face, answering any question with perfect self-assurance and not a trace of servility, went straight to my heart. To say they are crushed under the iron rod of discipline is the greatest lie ever published; the exact opposite is the case. They are good soldiers because they are treated and trusted like men, and have become self-reliant, independent agents—disciplined, because common sense and education teaches them that combined action is a necessity in all conditions of life, and only a fool kicks against necessary restraint.

It is equally wide from the truth to assert that the iron heel of a military despotism is turning them into socialists. Socialists many old soldiers in Germany may be, in the sense that they will support the party with their votes that promises them the same freedom that British labor has long enjoyed, and which, provided the law is strong enough to enforce fair play between both parties, is in itself an excellent thing. In that sense the Emperor himself is a socialist, but both Emperor and soldiers know the value of a strong Government and disciplined obedience too well to listen for a moment to the rabid howl of the proletariat press, principally recruited from the ranks of those whose defective physique and superabundant imbecility have prevented their passage through the great national university; and, if the occasion should arise, I have not the least doubt in my mind that every one of those amongst the soldiers who for their immediate interest may now be voting for socialist candidates would fall in with their old steadiness and shoot the anarchists and their followers down without the slightest momentary hesitation. But Fulda was reached in due course, and I said good-bye to my friends and took my seat in the train to Mainz, and on the way made the acquaintance of an old German gentleman, who confirmed in conversation the views I have expressed above.

I staid a night in Mainz to meet an old friend, an infantry officer and an Englishman, from whom I received many

useful facts as to the performances during the five-weeks campaign. They were indeed extraordinary. Day after day the men had been under arms for nine hours at a stretch, and on the last three, which wound up the business, had every morning paraded at 5:30 a. m., and not got back to quarters till 6 p. m. The heat had been very great and the mountainous country most trying. One action in pursuit was exceptionally trying, and the conduct of the opposing rear guard most excellent, and again and again they came up with him; the batteries on both sides came into action, the heads of the columns closed up, but each time as the advance was about to commence the enemy slipped away and the weary pursuit began again. Measured as nearly as we could by the map, the distance traversed in full marching order, on a hot day, up and down steep hills and through forests, was fully twenty-five miles, and to this six more should be added for the mere distance involved in the tactical maneuvers which could not be measured exactly. |

Of the changes due to the new powder, or which were prophesied as its consequence, I saw little, both in France and Germany. Batteries in action were clearly discernible by the flash up to ten thousand yards, and as regards the infantry, though only on one occasion did I notice the scintillating sparkle of the flashes which had struck me so much last year at Metz, still, as long as European troops remain what they are, and fail to come up to the ideal of the Red Indian skirmisher, they will practically always be sufficiently visible to men with decent eyesight. Your tactical training and common sense tell you where to look, and the thin blue haze or occasional flash then soon clears up the mystery. As to the advantage it confers on the side which means to kill, and not merely to avoid killing, the gain is incalculable, for you see your target before you and your men around you, and the maintenance of fire-discipline is many times more easy than formerly.

THE PANICS AT GRAVELOTTE.

I.

Those who remember the original correspondent's reports of the war of 1870 will recall numerous references to a condition of panic prevailing in the German Army during the battle of Gravelotte (18th August), which it is exceedingly difficult to reconcile with the official history subsequently published by the staff—a work which, to our misfortune, it has been somewhat the custom of our tactical teachers to accept as a species of revelation, no word of which is to be questioned. A new work by Captain Hoenig, one of the ablest military writers of his country, entitled "Twenty-four Hours of Moltke's Strategy," has recently been brought out, which sheds considerable light not only on the question of the panics, but also on the whole subject of the method of fighting or tactics of the Germans during this war. It has been a great hindrance to our tactical evolution that we have always assumed that the Germans fought in a certain manner because due reflection had convinced their ablest thinkers that this manner was the right one, whereas the truth really was they assumed this form because want of tactical training (particularly in their leaders) and a markedly inferior armament compelled them to fight the best way they could, and not as they would have wished to; and since the war, whilst we have been endeavoring to copy their system—or, rather, want of system—on the grounds of practical experience on the Franco-German battle-fields, ever since the first flush of enthusiasm spent itself, their leading thinkers, Meckel, Von Scherff, etc., as publicists, and their generals as practical instructors on the parade-grounds, have been going on the opposite tack. "We won in 1870," they say, "in spite of our want of skill in handling troops, not by reason of it; let us make clear to ourselves the causes which led to our severe losses, and work to eradicate them."

As long as the senior officers who conducted that campaign were alive, the criticism needed to bring out these causes was very difficult to exercise; it is still difficult to state in plain language what actually happened on many

battle-fields—witness the storm raised by Meckel's now well-known "Midsummer-Night's Dream." Hoenig, however, who is a reserve officer, and has already done good service in this cause by his study, "The Two Brigades," is absolutely fearless, and speaks his view of the truth in the most vigorous manner, tearing and rending the unfortunate official history till it has hardly a rag left to cover its nakedness, at least with regard to this particular battle.

He was not a spectator of the fight, it is true (he was badly wounded at Vionville two days previously), but he has studied the ground with the utmost care, and has collected a vast mass of information from eye-witnesses and regimental histories, and uses this evidence with, to my mind, great care and judgment. It is frequently objected to his work that it is very easy to be wise after the event, and Hoenig would have done no better himself under the circumstances, but this objection is entirely beside the point in this class of military work, the purpose of which is simply to find out the truth, state the causes of the incidents, and by study learn to avoid them in future. And this he has done in a masterly manner. The title of the work seems to me misleading,—it is in a far greater degree a tactical rather than a strategic study,—but some of the lights he gives us are invaluable for understanding the strategical movements of the 17th and 18th of August. Chief amongst these I should place the influence the great age of the King had in the choice of headquarters, and how this choice reacted on the conduct of operations. It must have struck many readers of the official account as curious that the preliminary orders for the 18th were issued at 2 p. m. on the 17th from Flavigny, at an hour when little was known of the French position, and the outpost reports could not possibly be in. This Hoenig shows was entirely due to the anxiety of headquarters to get the King back under cover in Pont à Mousson for the night, and generally to prevent his over-fatiguing himself, and under the circumstances one can only wonder at the skill with which Von Moltke framed the order, leaving it open to alteration for all contingencies. He; however, does not clear up the extraordinary apathy of the German cavalry throughout the whole

day. It is true the 5th and 6th Cavalry Divisions were so exhausted by their previous day's work that nothing could in reason have been expected of them further; but other squadrons were coming up, and a five-mile ride to the front would have cleared up all difficulties. Hoenig suggests that a younger man, say Napoleon, under the circumstances would have ridden forward, seen with his own eyes and slept on the field, not a severe trial on a warm, fine night in August; but even this would not have relieved the cavalry of their responsibility, and, as far as I can see, nothing ever will do so.

Space prevents me following him throughout the whole of his book; it numbers some 240 pages, and every one contains many facts of exceptional interest. I can only pick out here and there points of particular moment.

One of the first of these is the small headway that had then been made amongst the senior officers in grasping the full scope of what is implied by decentralization of responsibility. The 7th Corps, Von Zastrow, lay to the south and west of the plateau held by the French, and separated from them by a deep rocky ravine, the bottom and sides of which were for the most part clad with thicket and forest.

From actual observation I can agree with Hoenig. All this ground is by no means impassable for infantry, and it would have been an easy task to reconnoiter and make good tracks practicable for guns in the time at their disposal. Napoleon executed a much more difficult task when he brought guns on the Langrafenberg at Jena. But to do this the staff of the corps should at once have reconnoitered the ground thoroughly, or caused it to be done. They, however, did nothing of the kind; and since, further, none of them, more particularly Steinmetz, commanding the 1st Army, seem to have been accustomed to operating in difficult ground, they were frightened at the sight of the mountains, and jumped to the conclusion that the heights could only be approached by the great chaussée from Metz to Verdun, which crosses the ravine on an embankment 40 feet in height at least, approached on either hand by deep rock cutting, forming, therefore, a defile of the worst character, and perhaps 1,200 yards long.

Now this road ran along the line separating the 8th and 7th Corps, the whole of the latter lying well to the south. The 8th Corps, which belonged to the 1st Army, Steinmetz, had been withdrawn from his command by Von Moltke's order that morning, and though the 2d Corps following in rear had been assigned him instead, Steinmetz was hurt and annoyed, and his loss of mental balance had a most sinister influence on the course of the day's fighting.

His orders received from Von Moltke about 10:30 a. m. indicated his course for the day—viz., an attack against the enemy's left flank from the direction of the Bois de Vaux (i.e., from the southward), and cautioned him meanwhile only to use his artillery. At the time the infantry of the 7th Corps was scattered about without any cohesion at all over a large space of ground, and the first duty of the corps commander should have been to get them in hand—a duty which Hoenig shows was perfectly practical. Within two hours nineteen battalions might easily have been concentrated along the rear edge of the above-mentioned wood, but nothing of the kind was attempted. When about noon the firing began, the whole artillery available unlimbered south of Gravelotte, and a number of isolated battalions were launched straight at the French position, and there was no unity in their efforts whatever. Nevertheless, by degrees they conquered some very important quarries by the edge of the plateau, and further north, in conjunction with Goeben's corps (the 8th), carried St. Hubert, a farm to the east of the defile, the enemy having been driven out of the buildings by artillery fire. Goeben's handling Hoenig praises throughout, and St. Hubert having been won, and the edge of the plateau also reached, Steinmetz came to the conclusion that the enemy was beaten, and nothing remained but to pursue. Now, exactly at the same time, Goeben, and the artillery officers of the 7th Corps, who had a good view of the enemy's position, and could see that only the outposts had been carried, the main line being still untouched, noticed movements on the other side which led them to believe that a storm was brewing, and Goeben ordered a brigade across the ravine to support the troops at St. Hubert.

At this moment Steinmetz had just issued his orders for the "pursuit." "The 1st Cavalry Division crosses the defile of Gravelotte; the advance guard, supported by the fire of the batteries of the 7th Corps, will attack, leaving St. Hubert on its left, in the direction of the Moscow farm, and will not draw rein till it reaches the glacis of Metz; all other regiments to follow it." Metz, I would here point out, is at least seven miles from St. Hubert, and the ground between perfectly impracticable for cavalry; further, as the direction indicated points to Thionville, not Metz, it is very evident the old general had not consulted his map. Again, if the enemy was retiring, the cavalry must trot to overtake them, and this would bring them in six minutes or so alongside of Goeben's infantry already occupying the defile, at a spot where the embankment is twenty feet high or more, in full fire of the enemy. But this was only the beginning. Von Zastrow at the same moment ordered the whole artillery of his corps at hand to cross the defile and come into action beyond it. The commander of the artillery could hardly believe his ears as he received this order. Seeing clearly what was coming, but compelled to obey, he sent his gallopers down the line to transmit it, with the caution not to go too fast, and to tell the battery commanders to be as slow about limbering up as they reasonably could be.

Unfortunately, three batteries, not having found room to come into action, were standing ready at the western exit of Gravelotte, and nothing could save these, even though the staff officer did his best not to find them; they trotted off, and being nearer to the road than the cavalry, took the lead of them.

"Now," to quote Hoenig, "let us use our imagination:

"1. The eastern exit of Gravelotte had been obstructed by wires only partially removed by infantry.

"2. St. Hubert had just been carried, and hundreds of wounded stragglers, etc., were dragging themselves back along the road.

"3. To meet them comes—first an infantry regiment (the 29th); one squeezes by as best one can.

"4. But this infantry did not know cavalry and artillery were following.

"5. The latter also were ignorant that they would find infantry in front of them.

"6. None of the three expected the crowds of stragglers.

"7. All three were full of zeal for action.

"Presently all of them were chock-a-block.

"What a picture, and what leading! There was only one road, and into it one threw troops from five different commands, without any mutual understanding, any order of march: left to themselves to get through as best they could, then some to pursue, some to reinforce, etc. Now, add to this a wall of smoke in front out of which the flames of burning St. Hubert shot up, the shells from 144 guns in action screaming overhead, men crowding together crushing the wounded, the cries of the latter, the shouting, the echoes of bursting shells in the wood, and lowering dense over all a dust-cloud that made dark the burning sun above. Imagine all this, and try to realize the mental condition of the men struggling to fulfill their orders."

Needless to say that this mighty pillar of dust was not long in attracting the enemy's attention; what it was caused by they could not tell, but it was evidently something very unusual, and they prepared to meet it. The dust on the road grew denser, men fairly groped in it, and they began to remember that, as they descended, the enemy's fire, both of artillery and foot, had almost ceased. Each felt something was brewing, and a queer feeling of anxiety as to what it might be arose.

In front were the 4th and 3d Light, then the 3d Horse and the 4th Heavy Battery, who crushed past the 29th Foot as best they might. Seizing the opportunity, the 1st Cavalry Division pressed in close behind in the following order: 4th Uhlans, 2d Cuirassiers, 9th Uhlans, another horse battery, and then the 2d Brigade (viz., 8th Uhlans, 3d Cuirassiers, 12th Uhlans), and to these attached themselves the two *divisional* regiments, the 9th and 13th Hussars, who, not belonging to the *cavalry division*, tried to push past the former. They had originally all moved off in column of

troops, but had been compelled to diminish the front to "threes," and this not being carried out quite as on parade, had brought the following regiments to a dead halt. Thirty-two squadrons were thus jammed up on this narrow dyke or between walls of rock. Fortunately for themselves, the batteries of the 14th Division had been cut off by the stream, and remained limbered up awaiting their turn, but this was, nevertheless, prejudicial to the whole, in so far that they were deprived of their fire just at the moment it was most wanted (from the Gravelotte side) to cover their debouch from the further end of the gully. The leading batteries got through and unlimbered, the 4th Uhlans also. Both were received with a storm of shot and shell; two limber trains, maddened by the noise and pain of wounds, bolted back into the mass, crushing many; the situation was intolerable; then suddenly from over the valley they caught the notes of the "retire," and, except the first four batteries and the 4th Uhlans, they did; how, Hoenig does not say, but I doubt if they did it at a walk.

Hoenig does not excuse Hartmann, the commanding officer of the cavalry division, from blame. His orders were precise, but he should have satisfied himself that they were possible of execution, and that seems a fair comment. The batteries of the 14th Division also returned to their old place, and had again to "range" themselves. Had they remained in action, their covering fire might have done much to reduce the losses of their comrades on the other side. The fate of these merits a few lines of description. The artillery commander had ridden on in front to reconnoiter a position, but, in their eagerness, the batteries had crowded on him too rapidly, and had given him no time to look round. Actually the position is so bad for artillery that, going over the ground two years ago with several decidedly capable British gunners, we simply could not believe that four batteries had ever unlimbered there. With the books and maps in our hands, we tried to identify the spot, and came to the conclusion that either they never got there at all, or the distribution of the troops as shown on the map was utterly incorrect. The books (Hofbauer and the official history) state that only the

knee-high wall extending along the road from St. Hubert offered any cover. Gnügge's battery, the 3d, took advantage of it; the others extended the line to the east, front to the north (i. e., Moscow farm), and this brought their flank within 300 yards of French infantry in numbers in Point du Jour. We felt certain there must be some mistake, and at this hour Point du Jour must have been in German hands, but it was not; and with the fire from this point on their flank, and an overpowering enemy in front, these batteries held their ground and served their guns. The 1st, which was the first on the right (i. e., exposed) flank, was soon shot to pieces, but as long as a gun could be manned its captain, Trautmann, lying mortally wounded on the ground, having dragged himself in torture till he could prop himself up against a shattered carriage, directed its fire till his life ebbed out, and he sank—a hero if ever there was one. The same fate overtook the 2d Battery, Captain Hasse. Orders were sent to him to retire, but seeing the importance of standing by his comrade on the left, he sent back word he would rather die than give way. He actually maintained his position for two hours. Then fresh teams were brought up, and as he had fired his last round and those of Trautmann's guns also (it appears they had only their limbers with them), he at length gave the orders to limber up, but all the fresh horses were killed except two, and these eventually brought off a single gun heavily laden with wounded.

Gnügge held out all day, and he, too, lost very heavily; it was *some minutes* before his first round was delivered, but then his guns shot so straight that with his comrade Hasse they beat down the enemy's fire, range about 700 yards. A more extraordinary instance of the power of guns, as guns were then, it would be hard to discover; it more than equals the case of the 8 guns on the Spicherenberg, which in a half-hour's duel beat off and compelled a whole French battalion to retreat from their trenches at 600 yards distance only.

The 4th Heavy Battery never unlimbered at all. Had its commander got to the south of the road, its fire against Point du Jour would have been invaluable in relieving the pressure on the flank of the others, but he lost his head and

retired his guns. The experience of the 4th Uhlans is perhaps the most remarkable of all. They had to halt, as the 4th Heavy Battery prevented their deployment, but they moved off the road to the southward to clear the way for the following regiment, and whilst there the colonel heard the "retire" from over the valley, an order he felt it impracticable, under the circumstances, to carry out; so, the regiment being then in column of troops, he sounded the "gallop," and led straight for the quarries to the southward, where he halted and wheeled up in line, facing the enemy about Point du Jour at 400 yards only. A small wave of the ground partially covered the cavalry, and here for a whole hour this regiment held out whilst the rapid-fire, flat-trajectoried weapon of the French poured out bullets towards them; then he retired, having reconnoitered practicable paths and taking his wounded with him. In the whole day, this regiment lost 3 officers, 49 men, and 101 horses.

Those who still doubt the possibility of well-led cavalry breaking infantry had better work out the following rule-of-three sum: assuming two-thirds of the loss to have been suffered in position, the remainder going and coming, then if a line of infantry firing for an hour against a stationary target and at point-blank range can kill 66 horses, how many would the same line kill in four minutes against a rapidly moving one? Double the rapidity of fire of the rifle, and the prospect is even then not so very terrible, even if accuracy remained constant; and did not, as we know it does, vary inversely with the square of the rapidity. Such things happened in 1870, and will happen again. It is not improved weapons that the infantry require, but a new kind of men, and it is easier to get a patent for the former than for the latter. I would also call particular attention to the fact that the French about Point du Jour were by no means beaten, but, on the contrary, it took the Prussians a couple of hours more of hard fighting to turn them out.

II.

In the last article on Hoenig's new work I brought the relation of events down to the moment when Steinmetz's attempt at pursuit had utterly collapsed. The 4th Uhlans were retiring into the ravine, Trautmann's battery had ceased to exist, Hasse had succeeded in withdrawing his last remaining gun, and Gnügge alone, sheltered by a knee-high wall, remained in action. Some 15,000 infantry, densely crowded together, still lay to the south of the road and St. Hubert in such appalling confusion that all efforts to rally them proved hopeless, and as the bullets and an occasional shell plunged into them, their pluck died out, and they began to dribble away into the woods in the ravine by hundreds. All this took some time, about two hours, and meanwhile other events were taking place in rear, to which we must return.

The 2d Corps, Von Fransecky, was forming up near Rezonville, the 3d Division already on the ground, the 4th in the act of arrival. This corps was now assigned to the 1st Army by Headquarters. The latter had ridden forward to the right rear of the 7th Corps close to Gravelotte, and here the meeting between the King and Steinmetz took place. What words passed between them will never be known, the two staffs remaining a couple of hundred yards away; but, to judge by the king's gestures, Steinmetz had rather an unpleasant five minutes. If he had been difficult to get on with before, he became ten times worse afterwards, and refused to do more than merely transmit the orders received, without adding the details of execution which it was his province to supply.

The 3d Division was now rapidly approaching, brigades in rendezvous formation, bands playing, colors flying. As they descended the gentle slope towards the enemy's position just above the cleft of the ravine, the sinking sun (it was about 6 p. m.) caught their burnished helmet spikes till the masses glowed like a sea of fire, an apparition not lost on the French. Le Boeuf and Frossard met at this moment; they were entirely unable to guess at the number approach-

ing, and Frossard considered these newcomers must be the "Reserve Army under the King of Prussia," really meaning the 3d Army under the Crown Prince. Both agreed that something must be done, and that to break and defeat the troops immediately before them, if only to save the honor of their arms and gain time for retreat. Both had caused the time which had elapsed since the "pursuit" fiasco to be utilized to good purpose; new reserves had been organized, cartridges served out, etc., and guns, which had been driven off the field by the Prussian artillery, were waiting under cover, loaded and limbered up, ready to gallop forward into their old position, from whence they knew the ranges. Frossard's corps was the first ready, and, unfortunately for the French, he moved off independently. Suddenly the front of his line was wrapped in a smoke-cloud, a storm of bullets swept through the air, and the French dashed forward with all their old gallantry and *élan* from Point du Jour. The exhausted fighting line immediately to their front gave way; the French followed, skirting Gniigge's battery at about 100 yards; the latter threw round the trails of his three flank guns and poured case into them as they passed. The Prussian artillery on the ridge south of Gravelotte woke up, and their shells visibly shook the order of the charge, but still to the spectators at Gravelotte it seemed that they reached and entered the eastern boundary of the wood in the ravine. Then suddenly out of the western edge of the same wood there burst forth a perfect torrent of stragglers, the thousands literally who for hours had been collecting in it. In a wild access of panic they dashed up the steep slope, and on to the front of their batteries; in vain the gunners yelled at them and threatened to fire on them (but did not), in vain mounted officers threw themselves upon them sword in hand; the mob was mad with terror, not to be denied, and swept through the batteries, demoralizing all they came in contact with. But here one of the strong points of the artillery came out: the guns could not move without horses, and their detachments stuck to them, and in a few moments resumed their fire, and as at this moment some fresh troops from Goeben's corps (the 8th) cut in on the French flank from

St. Hubert, the latter were compelled to retreat. As a fact, they had not really ever reached the wood; the artillery fire, supplemented by that of the really brave men who had rallied at the edge of it, had stopped the rush, and a very slight pressure on the flank had induced their rearward movement.

This was the second panic of the day, but a third one was at this very moment brewing, and, curiously, as a result of Goeben's order which had brought this above-mentioned and sorely needed support to the flank. Goeben, seeing the 2d Corps approach, knew that he had no further need for a reserve, and had sent in his last-closed troops towards St. Hubert some minutes before the French counter-stroke. The direction in which they were sent is open to question on tactical grounds; there were far too many troops at St. Hubert as it was, and with the 2d Corps on the ridge at Gravelotte, a limit was actually placed to the French attack in any case; his reserve was more required on his outer flank, where for hours a most extraordinary gap existed, offering a chance to Le Boeuf such as in the hands of a Napoleon must have given the victory to the French arms, but of which, unfortunately for them, Le Boeuf did not avail himself.

But, right or wrong, Goeben could not conceivably have anticipated what actually did occur, for it simply passes the mind of man to conceive such a concatenation of blunders. The 9th Hussars, the divisional regiment, had remained with the reserve—i. e., the last-mentioned brigade (the 32d)—and when this moved off, either with or without orders, it followed in its track, along the great road, of course. The deployment and action of the leading troops of the brigade against the flank of the French counter-stroke checked the movement of the following infantry, and the cavalry regiment, as usual, tried to force its way past. They were in column of threes; soon the block became absolute, and to reduce the height of the target, the officer commanding the 9th Hussars ordered the men to dismount, which they did. As if things were not already bad enough for the Germans, fortune ordained yet another cause of perplexity. At this very moment, the reserve men and horses of the regiment, coming straight from Germany, arrived on the scene. They

had found the halting-place of their command, had there been rapidly told off into a fifth squadron, and immediately moved off in its wake. Their horses were half-broken to fire, the men even less trained, and in a few minutes they became exceedingly unsteady in the roar of the fire re-echoing from the woods and the crash of the bursting shells. The colonel in front knew nothing of this reinforcement, and presently, finding all possibility of advance at an end, he decided to get out of it far enough to give the infantry room. Having mounted the men, he sounded "threes about," that fatal signal, and then "walk, march." "Threes about" was obeyed with unanimity, but the untrained horses, being now at the head of the column, quickened the pace. The colonel, having retired as far as he wanted to, then sounded "front," and was obeyed by the first three and part of the fourth squadron; but the fifth never heard the "front" at all, or, if they did, mistook it for the "gallop," for at that moment they broke clean away and dashed back in wildest confusion up the road. The led horses and teams in the street of Gravelotte took fright. Panic seized on most of the men, and the next moment a horde of men, horses, teams, etc., dashed out of the westward end of the village and made off for the setting sun. Officers of every rank rode at them with their swords and used them, but were swept away too, and, not two hundred yards away, the King and staff were spectators of the disaster.

Fortunately for the Germans, the French were in no condition to take advantage of this disorder, even if they saw it. The Prussian gunners were still in action, and fairly swept everything away before them, even with their old-fashioned common shell, and what chance would any existing troops have against modern shrapnel under similar circumstances? A lull now took place for a while, but the King's blood was up, as was every one's else except Von Moltke's. The King now ordered Steinmetz to attack with everything he could lay hands on; Von Moltke endeavored to dissuade him, but in vain. Having said all he could, Von Moltke fell away a couple of hundred yards or so and found some other business to attend to. This is historical, and deserves to be re-

membered, for Von Moltke in his recent work has deliberately taken the blame on his own shoulders to save the King's prestige, but there were many witnesses to the scene, and Hoenig vows they can corroborate his statement. Steinmetz, as we have seen, had lost both his head and his temper; he passed on the order as he received it to Von Zastrow (8th Corps) and Von Fransecky (2d Corps). The former had never for a moment had his command in hand during the whole day, and now all he could do was to send galloper to order anyone they could find to advance, simply, no direction or method being assigned them. Von Fransecky, who was a first-class man, but perfectly strange to the ground, dared not risk a movement through the woods direct against the enemy in the fast-growing darkness (it was now past seven and in the ravine the light was rapidly failing). He accordingly chose the good old road, the defile so often fatal on this unlucky day, though doing so meant, with regard to the position of his corps at the moment, moving round the arc of a circle instead of by its chord. The order was given, the troops took ground to their left, wheeled into column of sections down the road, and with bands playing, King and staff waiting to receive the officers' salutes as they passed, the unfortunate corps moved forward to what should have been, and narrowly escaped being, its doom.

St. Hubert had remained in the Prussians' hands all this time, and the ground immediately on either side of it, but Von Fransecky and the officers with the leading regiments, new to the ground, appear to have been unaware of this. As the leading regiment approached the unlucky garrison of this their bridge head, unable to distinguish the uniforms in the twilight, but receiving the bullets meant for their comrades, they "front formed" as best they could, and opened a violent fire into the backs of their own men, many of whom broke back, overran the head of the column, and confusion worse confounded ensued. The bravest men held on to the post, which was never relinquished, and under their protection order was ultimately re-established, but not till after a long delay.

We must return for a moment to the events which had

been taking place south of the road about the great quarries just before the 2d Corps began its advance. These quarries, properly utilized, were the key to the French position, lying as they did, but some 400 yards in front of Point du Jour, and affording ready-made cover for a whole division to form under. They had been captured once by the Germans some hours before, but the French counter-stroke had forced them out again, and the latter had held on to them with grim determination. Shortly before the 2d Corps moved off, the isolated companies, on the initiative of the leaders on the spot, had again succeeded in rushing them, and again the French from Point du Jour made desperate and repeated efforts to reconquer them, with all the better chance of success, for the darkness had now deprived the Germans of the support of their artillery. Von Zastrow meanwhile, as already stated, had been sending officers to order whatever they could find to advance, and, fortunately, they only found four out of ten battalions. These were just now emerging from the wood in rear of the defenders of the quarries, when the French made an unusually vigorous rush for their front. The supporting battalions, receiving a heavy fire and knowing nothing of the presence of their own men in front of them, rushed forward and poured a heavy fire into the backs of the latter, and one must do honor to the courage these displayed. They were the survivors of the fittest, weeded out by a process of selection that had endured for hours, and no man left his post, but hung on and mowed down the French at their very muzzles. Then, as the fire from the rear still continued, officers and volunteers walked bravely back in the teeth of their own men's fire, and at length succeeded in stopping it. It was now pitch dark, the "cease fire" had been sounded all along the Prussian line, and accepted, curiously and very fortunately for the Germans, by the French (it is the same in both armies and our own), for the former were now about to put the finishing stroke to their day's work of blunders, and expose themselves to what should have been absolute destruction. It is difficult to disentangle what actually took place within my space. Hoenig takes pages to narrate it, and I have but sentences to dispose

of it in. Briefly, when the troops coming up the road fired into the backs of their comrades, and a part of the latter broke back, hopeless confusion ensued at the head of the column. The troops in rear, mad to get forward, pressed hard on those in front, and actually, thanks to their close order and excellent discipline, managed to force their way through as formed bodies, and then attacked "outwards in all directions, only to be beaten back again."

Again there was a lull in the fight, and it seems to have been about this time that the "cease fire" was sounded. Von Franseky, his two divisional commanders, and their staffs were at St. Hubert. They decided that something more was to be done, and ordered the 4th Division forward. At the time it was so dark that the troops had literally to grope their way across. The leading battalions, in fact, were brought to a stand by the darkness, and formed in close column, and by degrees the others formed on them, so that by about 10:30 p. m. 24 fresh battalions were massed beyond St. Hubert on a space of 1,300 yards front, 900 yards depth. "How, nobody can now say," and about these had aggregated the débris of 59 companies of the 8th Corps and 22 of the 7th, so that towards 11 p. m. 48 battalions stood like sheep in a pen on a space of about 1,650 yards front by 1,100 deep, and not 300 yards from the enemy's muzzles. "Surely," as Hoenig says, "military history contains no parallel case. Why had one brought these masses together? To attack; but then, in the name of all things reasonable, why did they not attack? The answer may perhaps be given by those who understand the 'moral' of troops. * * * Why did not at least these twenty-four fresh Pomeranian battalions go straight for the enemy without a shot? One hears so much of 'dash' and 'resolution,' of 'an advance with the bayonet,' of 'the advantages of a night attack.' Here lay all the conditions for success in such adventures ready to hand, the enemy not 300 yards away. The troops were 'massed' and the dreaded fire zone lay behind. If, as the troops actually did, it was possible to remain in this dense mass from 11 p. m. to 6 next morning, and always under a certain amount of fire, for from time to time the musketry blazed up anew, then why could

not we go forward with drums beating, and overrun the enemy with cold steel? Three minutes were all that were required, and we should have lost fewer in those three minutes than we actually did in the seven hours. Why? The answer is plain, and I will give it: Simply because we did not understand what fighting means; the whole course of the day shows it. We did not understand either skirmishing tactics or the employment of lines and columns, and the climax of the day was the bankruptcy declaration of our tactical experts. The spirit was there,—that is proved by our seven hours' endurance in this position,—but it is not enough merely that the spirit should be there; one must also know how to use it."

Mind, these are the words of a German critic, not mine, and, as far as can be judged by comparison with official reports, regimental histories, and the stories which from time to time have reached my ears in messes and elsewhere, they are by no means exaggerated. Indeed, Hoenig is not at all the man to do so willfully, for it was Hoenig who stood up for the infantry, and proved that this picture was at any rate not of universal application throughout the war, when, some three summers ago, Meckel showed up in very unfavorable colors what happened in the German ranks on the battle-fields of 1870 in his "Midsummer-Night's Dream," a work that may be summarized in a few words from his classic work on tactics: "The beat of the drum went before the thunder of artillery, and our power shattered to pieces before the fire of his unshaken infantry. Woods, hollows, and villages were filled with stragglers, and the open field lay tenanted only by the dead and dying victims of our premature violence." Yet these are the tactics which our modern wiseacres would have us copy, and now at a time when ample evidence of their futility lies to our hand—for those, at least, who will take the trouble to use it.

To return to our "muttons," whilst the 2d Corps occupied this unheard-of position, the débris of the 7th and 8th were withdrawn as best they could be, and the massed bands, many of which had been left behind on the other side of the ravine, struck up "Heil dir im Siegers Kranz" and "Nun

danket alle Gott." Surely "All we like sheep have gone astray" would have suited the circumstances better.

It is only fair to give Hoenig's opinion as to how the whole fight of Gravelotte should have been conducted. Von Moltke's first order indicated distinctly an attack against the enemy's extreme left from the Bois de Vaux as the main point to be kept in view, and while that was preparing, the deployment of artillery only. This order was received about eleven, and Von Zastrow, warned in this sense by Steinmetz, should at once have proceeded to get his corps in hand, a proceeding he omitted, and, as a consequence, from first to last he never had a really formed reserve in his hands from beginning to end of the battle. His staff should have already reconnoitered all available approaches, and made arrangements for improving them for the passage of guns, and cutting paths through the forest and undergrowth. Markers should have been placed from point to point as required. Now would have come in the action of real light infantry troops as I would see them. Hoenig has not caught on to this idea yet, but Von der Goltz is its originator. Picked and highly trained men (seven about) from every company, under a non-commissioned officer, should have skirmished towards the heights, gradually reconnoitered, and formed a first fire position at the break of the slope. Then, whilst the guns poured in a hail of shell upon St. Hubert and Point du Jour, the infantry formed in company columns in the ravine should have worked up by the reconnoitered paths, and suddenly occupied in a dense fighting line the whole of the front indicated by the true skirmishers all along, from north of the main road to the eastern edge of the Bois de Vaux. Behind these the second and third lines form for attack; then, when this is completed, say in perhaps half an hour or a little more, from all points of the arc surrounding them the troops break forward for the assault of St. Hubert and Point du Jour. Judging by what actually happened, by the fact that throughout the day only once did even two battalions, as such, attack together, can any doubt exist that the result of this combined onset, prepared by both artillery and infantry, would have been the

capture of this wing of the position at the first rush? Even allowing for the inferiority of the Prussian infantry weapon, I think not, and assuming equal armament, I feel no doubt whatever.

To a lesser extent the same criticism applies, according to Hoenig, to the action of the 8th Corps, of which, on the whole, and under the circumstances as they occurred, he finds little fault. The want of a fire-position for infantry preparation was the chief deficiency, but, looking at the ground and the nature of the Prussian armament, I can hardly see how this could be avoided, though it might well be in the future.

Now turn to the losses, remembering it is "the terrible losses due to the new arms which caused the Prussian columns to melt away, etc., " and that it is on the assumed reality of these losses that our modern school of attack formations depends. We find the 2d French Corps, Frossard, the beaten débris of Spicheren and Vionville, and the 3d, Le Boeuf, opposed to, in all, three full German corps—in round numbers, 40,000 against 90,000—the latter with an enormously superior artillery armament, though with an inferior infantry one. The French lost in both corps 2,034 men, and the Germans, as nearly as possible, 267 officers and 5,128 men, or about 5.5 per cent. Of course these losses were very unequally divided. I have not the official lists by me for comparison, but I take the figures as Hoenig gives them. The four battalions of the 32d Brigade, the only ones who carried out a united attack together, lost in the whole fight 7 officers and 104 men, say $2\frac{1}{2}$ per cent. In the 7th Corps only two regiments, the 39th and 73d, had losses worth speaking of—viz., the former 4 officers and 124 men, the latter 3 officers and 164 men, out of 3,000 each; but, to the best of my recollection, some companies, particularly in the 7th Corps, suffered out of all proportion to these figures. Still, follow the course of the action as above depicted, make all due allowance for panics, for men—not a few—shot by their own side, etc., and where are the terrific losses before which the old-fashioned "line" is to melt away. It took more than this to make it melt in the old days any way. If it is urged that

modern weapons are more perfect than those of twenty years ago, here and throughout the war I should be content to halve the number of rifles and double the rate of fire, or double the rate of fire throughout. Still I see nothing half as terrible as the storm of fire that destroyed the Imperial Guard in a few moments at Waterloo, or the fire that again and again failed to stop the rush of our troops in the Peninsula. What comparison can there be between this fire and the case that greeted our troops in the Crimea, or from the fourteen guns that swept the breach at Badajos? yet neither sufficed to stop us, though subsequent events, and passive obstacles, forced us to retire.

It is that blessed word *breech-loader* which has wrought the evil, and, curiously enough, it has been amongst the men who are personally notorious for exceptional personal courage under fire that it has worked the greatest havoc. They have gone on the *omne ignotum pro magnifico* theory, and fallen down and worshiped it; it has become their fetish, and they have immolated in their lectures thousands of unfortunate Prussians (notably of the Guard) before it. Yet, had they been actually on the spot, they would personally hardly have noticed it, but have said pretty hard things of the troops who failed to stand up to it.

The more one studies this war, the more one becomes convinced of these truths. The Germans were tactically disgracefully handled; want of artillery preparation, the fatal system of attacking with a line of skirmishers only a couple of hundred yards in front of their company columns, and a marked inferiority in their weapons, in themselves were the causes of their disasters. As a consequence, wild confusion resulted; individual training of the soldiers was yet in its infancy, and the short service (two and a half years at the outside) was not enough to render them proof against the trouble around them. Out of 10,000 put in on a given front, frequently not more than 2,000 actually fought in the fighting line, but these were the survivors of the fittest, and their conduct deserves all the praise lavished on the army as a whole.

The German officers as a body are perfectly aware of

these facts, though, for obvious reasons, they rarely speak of them, and for the past twenty years have been endeavoring to correct them. Their progress has been slow, because they had a world of preconceived ideas to conquer, but it has been sure and on lines almost exactly the opposite to those indicated in our new drill-book, as an hour's visit to the Tempelhof fields here would demonstrate to anyone who knows what to look for. The French in their drill tactics were ahead of the Germans in 1870, but since then have gone backwards, and are now years behind them. We alone were then in a position to make a jump forward, basing our ideas on the old Peninsula traditions and the experiences of the American war, imparting only the principle of individual instruction and the same decentralization of command which obtains in a polo team—viz., every man (i. e., captain or other commander) to be held responsible that at every moment of the game he occupies the correct position relatively to the other members of the team, and that, too, without being shouted at.

This may appear an extreme assumption, but let us apply it to the celebrated glacis of St. Privat. The gunners already in line, at say 2,000 yards, have prepared the way. The Light Division as real skirmishers have crept up to and marked the first fire position. Our first line follows. Deployed two deep, say 6 paces between companies, they would have presented a target of far less depth than the skirmishers' supports and reserves constituting the first line of the Prussians, and suffered correspondingly less loss. As a fact, Von Kessel, commanding the 1st Brigade of the Guards, says in his report that from the moment they broke cover it was evident that all ideas of avoiding losses based on distances between supports and skirmishers, etc., was entirely illusory, and other eye-witnesses confirm his statement; and that our single line presents a less favorable target than three following ones in the conventional formation any one can convince himself by looking at troops thus formed on a parade-ground. If more practical proof is wanted, place dummies in the corresponding orders, and fire at them at the next field-firing experiments. The first rush of the Prussians

took them in to 600 yards; three battalions that actually did go in line, three deep, got even further, but then they had to stop, because the *élan* of the others on either flank, in extended order, had given out sooner, and then came the misfortune for the Prussians that they had halted practically beyond the effective range of their weapons. With equal arms this would not have occurred, but the moment the line opened effective fire, and the bullets sang about the heads of the enemy, their aim would have been deranged, and a following line would have reinforced the first with far more in hand than the former; a third and fourth might follow, at time intervals of perhaps ten minutes. Ultimately the whole must have broke through to the front, just as the Prussians actually did, but the whole affair would not have lasted fifty minutes, and the losses would have been correspondingly reduced. The Prussians advanced, offering a most favorable target—they were for two hours under a heavy fire to which they could make no effective reply. Ultimately they stormed the position, got into the wildest confusion, and continued to fight till long into the night, losing men every minute. With the old drill-book, distance only being altered, our skirmishers would have effectually prepared the way, we should have exposed a far less favorable target, and been under fire say one hour against six. The Prussians lost 30 per cent in the whole day; would we, in the assault carried out as indicated, have lost 10 per cent, and, with the old discipline, would that have sufficed to stop us? I think not; but my readers can afford to draw their own conclusions.

VON MOLTKE'S WORK.

We shall probably never know the precise extent to which the credit for the resurrection of the German nation is to be divided amongst the three great men to whom it is due. Probably the old Emperor has never been and never will be sufficiently recognized as the ultimately responsible individual, but, nevertheless, it is certain that on Von Moltke rested by far the larger share of the load. He was so absolutely trusted by his chief that, though the responsibility

of actually signing the orders as drafted by the chief of the staff finally rested on the King, the mere fact of their being put in writing by his staff officer decided the signature, and the latter was perfectly aware that this was so.

The difficulty is to find some kind of a standard by which to judge him. The greatest characteristic of a successful leader is primarily and undeniably the power of coming to a definite decision in face of the most contradictory evidence, and staking the lives of thousands on its correctness, but the greatness of character evinced in so doing depends primarily on the nature of the man himself and the absolute purity of his motives. In the case of a man entirely egotistical, careless of human suffering, and playing only for his own hand, the decision of character which sends thousands to their death and for itself remains absolutely unmoved in the presence of the most appalling aggregation of human suffering the mind of man can conceive—Napoleon at Aspern the night before Wagram, for instance—excites horror only, and where the man arrives at his decision, not in presence of the suffering, but comfortably at his ease in Downing Street, for instance, as our great and good Mr. G—— has done several times in the course of his career, the horror is changed only to disgust and revulsion. Even with the latter the feeling of disgust may be modified, for, after all, the man may have convinced himself that his decision was for the good of his country, and was arrived at as a matter of duty only.

The Chicago merchant who simply and solely for his own personal profit attempts to corner the grain market, and thereby put up the price of bread 50 per cent in England, probably would create, if successful, a greater aggregate of suffering than Napoleon or Gladstone at their worst have ever done, but for him no excuse is possible and no respect can be felt. We cannot respect the latter; it is possible still to respect Napoleon, but we absolutely must respect and admire men like our own Iron Duke and Von Moltke, who, in spite of their extreme gentleness and humaneness in ordinary life, could resolve and execute for duty only, even

when face to face with the suffering their resolutions entailed.

All this the critics of Von Moltke and his life have hitherto missed. To them he was more the chess-player, moving his pieces about on the ground, hardly indeed intellectually as great, for the ultimate combinations in war are far more simple and resolve themselves into three at most—to turn the right, the left, or pierce the center—no more difficult to choose the right one than to play the three little thimbles and one small pea of the race-course, and indeed, if the fate of an empire, one's own life, and the lives and happiness of thousands depended on the decision, the resolution required to play the latter would be almost as great.

To my mind, the attitude of a mind like Von Moltke's in presence of an impending battle has been best described by the Sanskrit author of the Bhagaved Gita, and is contained in the first and second chapters of that book, to which I would refer my readers, not in the original, but in Edwin Arnold's translation. For those who have it not at hand, I add the following:

When the two armies—viz., that of the Pandaos and Rajah Duryodhana—stood face to face with each other, Arjuna, who appears to have been commanding the forces of the latter in chief, directed his charioteer, who happened to be Krishna in disguise, to drive him out into the open space between them for a last reconnaissance, and

“Seeing those opposed,
Such kith grown enemies—Arjuna's heart
Melted with pity, while he uttered this.”

I need not quote his utterance. Briefly, such thoughts must necessarily arise in the mind of any thinking man, called on to kill or superintend and direct the killing of beings with whom he has no personal quarrel. Finally he decided that killing is murder, quite in the style of our peace-at-any-price humanitarians, and then Krishna turns on him with these words, which embody the whole conception of a soldier's duty:

"Thou grieveſt where no grief ſhould be! thou ſpeakeft
Words lacking wiſdom! for the wiſe in heart
Mourn not for thoſe that live, nor thoſe that die:
Nor I, nor thou, nor any one of theſe,
Ever was not, nor ever will not be,
For ever and for ever afterwards
All that doth live, lives always! To man's frame,
As there come infancy and youth and age
So come there raisings up and layings down
Of other and of other life abodes,
Which the wiſe know and fear not. This that irks
Thy ſenſe life, thrilliŋ to the element,
Bringing the heat and cold, ſorrows and joys,
'T is brief and mutable! Bear with it, Prince,
As the wiſe bear. The ſoul that is not moved,
The ſoul that with a strong and conſtant calm
Takes ſorrow and takes joy indifferently,
Lives in the undying! That which is
Can never ceafe to be. That which is not
Will not exiſt. To ſee this truth of both
Is theirs who part eſſence from accident,
Subſtance from shadow. Indeſtructible,
Learn thou! The life is, ſpreading life through all.
It cannot anywhere, by any means,
Be any wiſe diminished, stayed, or changed.
But for theſe fleeting frames which it informs,
With ſpirit deathleſs, endleſs, infinite,
They periſh. Let them periſh, Prince, and fight.
He who ſhall ſay, 'Lo! I have killed a man'
He who ſhall think, 'Lo! I am ſlain'! those both
Know naught! Life cannot ſlay—Life is not ſlain.

* * * *

I ſay to thee, weapons reach not the Life.
Flame burns it not, waters cannot o'erwhelm,
Or dry winds wither it.

* * * *

This Life within all living things, my Prince.
Hides beyond harm; ſcorn thou to ſuffer then
For that which cannot ſuffer. Do thy part,
Be miſſiul of thy name, and tremble not;
Nought better can befall a martial ſoul
Than lawfuſ war: happy the warrior
To whom comes joy of battle.

But if thou shunn'st
 This honorable field—a Kshattriya.
 If, knowing thy duty and thy task, thou bidd'st
 Duty and task go by—that shall be sin!
 And those to come shall speak thee infamy,
 From age to age; but infamy is worse
 For men of noble birth to bear than death!

* * * * *
 So minded, gird thee to the fight, for so
 Thou shalt not sin!"

And, as far as it is possible to reconstruct his personal faith from his action, the following words seem to cover his case exactly:

"No man shall scape from act
 By shunning action; nay, and none shall come
 By mere renuncements unto perfectness;
 Nay, and no jot of time, at any time
 Rests any actionless; his nature's law
 Compels him, even unwilling, into act;
 (For Thought is act in fancy.) He who sits
 Suppressing all the instruments of flesh,
 Yet in his idle heart thinking on them,
 Plays the inept and guilty hypocrite;
 But he who, with strong body serving mind,
 Gives up his mortal powers to worthy work
 Not seeking gain, Brjima! Such an one
 Is honorable. Do thine allotted task!
 Work is more excellent than idleness.

* * * * *
 Finally, this is better, that one do
 His own task as he may, even though he fail,
 Than take tasks not his own, though they seem good.
 To die performing duty is no ill;
 But who seeks other roads shall wander still."

To seek, as our newspaper writers have done, to establish Von Moltke's claim to greatness on the ingenuity he showed in his strategical acts or in his astounding knowledge of the elementary arithmetic he required in order to solve the questions of time and space with which he had to deal, is merely to confess one's own ignorance of the nature

of war, which would not signify, and to belittle the hero one would praise, which does matter—very much indeed.

The truth is, in England the art of war is very dimly grasped as yet. It is an art, not a profession or a trade, and the men who have excelled in it have, as a rule, been "artists" in the highest sense. They have brought something higher than talent and industry to bear on it, and have succeeded because they possessed "genius." But who can understand or explain in set rules what genius accomplishes? You may found schools of art criticism, and lay down hard-and-fast conventional rules, but the true artist, whether painter, musician, or soldier, will walk through them.

Up to the era of Napoleon, war as a science had been in the hands of a limited clique in all countries. From time to time a "genius" arose amongst them, but, as a rule, the genius himself had neither time nor sometimes education to explain his methods, nor would his followers have understood what he meant had he been able to do so. His followers and disciples attempted to do so for him, and as their limited faculties were not able to follow the constant variations in the many factors of the complex problem with which he dealt, they fixed their attention on one of them only and eliminated all the rest. In this way arose what one may call the chess-board school of strategists, in whose misconceptions we in England are still deeply involved. But, under the terrible pressure which Napoleon's occupation brought to bear on Germany, the highest intellects were forced to bring their minds to bear on the problem. Philosophy in Germany was just then at its zenith, and Kant, Fichte, and Hegel were founding what, I think I am correct in stating, has since been the most prolific and important school of modern thought. This philosophy was taught in the original (i. e., pre-Jena) Kriegs-Akademie (or Staff College) at Berlin, and Clausewitz was one of Kant's best pupils. Whether Scharnhorst ever gave much time to the subject I have been unable to discover, but he supplied Clausewitz with an immense amount of practical data in addition to what the latter could himself contribute, and, after the conclusion of the war for freedom in 1815, Clausewitz sat him-

self down to study and elaborate a system of war ethics, if such a term be permissible, in which was investigated for the first time the action and reaction of the many constantly varying factors on which success in war ultimately depends, and in so doing first made clear wherein the great talent of a leader actually lay. The old-fashioned school of writers, by eliminating all factors but one, brought down the conception of a commander's intellectual achievements to the lowest possible level. Clausewitz raised it to its highest, and the whole result of his system is finally concentrated in his well-known phrase, "In war everything is simple, but to secure this simplicity is difficult." Speaking generally, and apart from the education of his own will-power on the lines already indicated in the extracts from the Bhagaved Gita quoted above, Von Moltke's great work in the Prussian Army was the reduction of everything connected with war to the condition of simplicity to which Clausewitz's saying referred. Instead of eliminating the factors of danger, privation, fatigue, etc., in which warlike action has its being, from his mental field of vision, by simply ignoring them, as Hamley does, he accepted them as concrete facts to be dealt with, and devoted his whole energy to reducing them to the lowest possible level by careful organization. Like a careful mechanical engineer, he reduced the friction in the moving parts of the great machine to its lowest possible limit, and then went a step beyond what the engineer can do, and by the creation of a specially trained staff made the machine into a sentient organism which under normal conditions could work itself. The present German Army mobilized for war, and in presence of the enemy, can best be compared to a gigantic octopus. Let the prey once come within reach of its feelers, and the whole organism settles to work, and, unless choked off by superior orders, does not desist till its utmost fighting power has been brought to bear. The life blood, which animates the whole, which causes it to perform this purely animal function, is the system of delegated responsibility which entails on each link in its constitution the obligation of acting on its own judgment. When the com-

mander-in-chief, through the medium of his staff, interposes, its action ceases to be automatic and becomes intelligent.

In this respect, thanks to Von Moltke, the German Army is far ahead of any other in the world. Probably we come next, but if we do, it is in spite of, and not by means of, our traditional system. France and Russia are still far behind in the race. But if under this head less than justice has been done to him by our English critics, this is even more the case with regard to his actual achievements in the field, for they have overlooked the fact that neither in 1866 nor 1870 was his work completed, but really only just begun. It takes time to carry through such a vast plan of reorganization, and in 1866 it was only just beginning. The higher commands up to and including the divisions were filled by selected men, but below these grades it had not been possible to find a sufficient number of really trained men for the posts; for those who had entered the army during and about the thirties had grown up in the old school, and were too old to be taught new lessons. Military service was a very different thing then to what it has since become, and the slowness of promotion and want of all interest in life, particularly in the smaller garrisons, could not have been without their effect. The cavalry was at a very low ebb; by the confession of its own men, it could not even ride, and as for scouting duties, of them it knew little, if anything; in fact, as a general rule, it moved behind, and not in front of, its army. The artillery was only partially armed with rifled guns, and did not know how to use these, and the infantry had only the breech-loader, as then untried, to rely on; and were almost entirely without war experience; and this army was to be pitted against a thoroughly war-seasoned one with an admirable artillery, and a cavalry in many respects superior to anything in Europe to-day—numerically, too, almost equal to its opponent. But its organization was that of a machine, and its principles of strategy those of the old school; and Von Moltke staked everything on his estimate of the hopeless slowness which must result, and the want of co-operation certain to exist between the officers in high command, from the attempt to lead a force of its numerical magnitude on

the old lines of over-centralization. How far he counted on the breech-loader it is impossible to say; no doubt it went for very much, but the essence of his strategy was based without question on the superior mobility which his higher organization promised him. He won, and ever since critics of the old school have been endeavoring to prove that, according to all rules of the game, he ought to have failed, not recognizing that he had changed these rules.

Even in 1870 his work was still far short of completion. The staff was nearly perfect; the leaders of the higher grades in the infantry much improved, both by experience and selection; the cavalry understood its rôle as a covering force, though it had forgotten its duty on the battle-field; the artillery had improved enormously, but the infantry were at an enormous disadvantage as regards their armament, and were deficient in length of service and war experience to those they were about to meet. Besides, a point generally overlooked, the new armament and the extended-order method of employing it suited the French nature far more than that of the German, for it was they who first brought it into vogue in Europe, and for three-quarters of a century it had been traditional with them.

To the ordinary student of the war, who goes only by the printed official accounts, and is unable to read between the lines for want of the key, which can only be obtained from the actors and eye-witnesses of the scenes described, everything appears to have gone like clockwork; and to a certain extent it did, but at a cost of enormous friction, due to inexperience of what was before them. The outposts encountered the enemy, and automatically every unit within reach closed in and surrounded him; the organization was so simple that even the grossest blunders could not cause it to fail ultimately, however bloody local repulses may have been. What really strained the mental endurance of Von Moltke was not the intellectual effort needed to decide which flank of the enemy to turn, but the knowledge of the weakness of many of the links to which he was compelled to trust, and what we should admire in him was the strength of character which assumed the responsibility with full knowledge

of the risks he ran. His conduct of the campaign would have been impossible to a leader directing similar numbers, but who had not previously by organization and training eliminated the chief causes of friction in the execution of his orders. Even Napoleon could not have handled such an army, for the reason that he had neither staff nor corps commanders to do it with, and it is in this point that the true bearing of Von Moltke's life on the conduct of war is most conspicuous, for he has made of it an art impossible for any hastily organized forces to undertake with success, even if commanded by men of undoubted courage and personal experience, but not trained to act together in the same school on sound principles. But as yet this lesson has not even been perceived out of his own country, and nations are still preparing to go to war with one another under conditions which render the very vastness of their numbers an additional drawback to them.

How the German armies would have worked in the next campaign had it been possible for them to be commanded by Von Moltke himself, in the full vigor of his intellect, can be only matter of conjecture; but, from the war till his retirement, it had made enormous strides, and he would have had a very different weapon to handle from what he ever had before. But, even as it is, the main portion of his work remains, and the leading of large bodies is now so simplified in that country that no leader of moderate ability and resolution can well go wrong with it. The attention of the world has been so exclusively directed to the more visible changes which have taken place in the armament and the training of the troops themselves that the silent and secret labors of the general staff have passed unnoticed, and it is quite clear from the recent writings and utterances of some of the leading French and Russian generals that the very outline of the idea has barely dawned on them; and, unfortunately, things are not much better in our own case.

THE SPIRIT OF THE NEW GERMAN INFANTRY REGULATIONS.

I have received from Berlin, accompanied by the warmest recommendations, a copy of a short pamphlet by a Captain Möller, of the German Infantry, containing an admirable study of their new regulations for the training of infantry and the spirit in which these regulations are to be interpreted. To those in our own service who wish to understand the method pursued in the making of their soldiers in Germany such a study is peculiarly valuable, because the regulations are so short, and so very general in the terms and expressions used, that it would be possible to put any construction one liked on them to suit one's particular fads, and hence one is liable to think one has found something entirely in harmony with one's own idea, when it is really diametrically opposed to the spirit in which the phrase or paragraph is actually interpreted in the German Army. This sort of misfortune has overtaken a great many of our Volunteer colonels and tactical nostrum-mongers in England.

The three booklets which contain all that is necessary for the instruction of the complete German soldier of whatever rank within the battalion are the "Exercir Reglement," the "Schiesz Vorschrift," and the "Feld Dienst Ordnung," the first and last corresponding to our "Field Exercises," and the second to our "Musketry Regulation"; and to get a complete grasp of the subject it is necessary to study the three together and discover how each fits into and supplements the other, which is difficult enough for even a German officer and almost impossible without guidance for a foreigner. It is this task which the writer has undertaken to execute; and, in the opinion of German officers likely to know, he has made a brilliant success of it.

His first task is to define distinctly the sphere of action of the company commander:

"The company is now for all tactical purposes what the battalion formerly was (and still is in England): a body of men drilled under fire by the verbal command of its com-

manding officer. Nowadays the latter only assigns to the company leader the duty to be carried out, and leaves to him the choice of the words of command and the drill method by which this duty is to be performed; but when the company is acting as part of the battalion, the company commander is responsible that its action is subordinated to that of the remaining companies. He has therefore not only to keep his attention on his own command, but to see what other companies are doing on either side of him, and to bring his own movements into harmony with theirs; and he must always remember that *neglect or delay to act on his own responsibility will be a heavier aspersion upon his character as a soldier* than a mistake in the choice of the method in which to act; and the conclusion of a fight or exercise must always find him and his company in the right place, even when no further orders have reached him during its course."

"The independence accorded him within these limits may under no circumstances be taken from him, for 'the independence of all subordinate leaders (in the choice of means implied) is the foundation of all great results in war.' (Exercir Reglement 54, Sec. 3.) The obvious danger to be guarded against here is lest the company leader, in consequence of a want of tactical intelligence, fails to grasp the scope of the movement as a whole, and so passes out of the hand of the battalion commander."

"On the other hand, just as it is his own duty to avoid this pitfall, the company commander must check any tendency on the part of his subordinates to get out of hand. It is his duty to keep his command firm within his own grasp."

"In order to carry out this part of his duty, he must choose his position with judgment. If the company is fighting alone, he will generally be able to direct its action best from the supports; where, however, he is acting as part of the battalion or larger command, he will, as a rule, be better in the fighting line."

"His instructions to his subordinates will be given in the form of orders, short and clear, and he must specially guard against ordering more than he *must* or than he *can*."

"Above all things, he must strive to keep the fire-effect of his three 'zugs' in his own hands. Just as the commander of an artillery 'abtheilung' (brigade division) disposes of the fire of his batteries, just so must the company commander be able to control the fire-action of his three 'zugs,' either concentrating their whole power on one point of the enemy's line, or occupying the enemy along the whole of his front with the fire of one 'zug' while the other two concentrate the whole of their power on some other target which may for the moment appear to be tactically more important."

"Of course, this fire-control is only possible in the introductory stages of an action, but the better the captain understands his work, the longer will he be able to maintain his control. But even when the course of the fight has deprived him of this power, his influence on the course of the action is far from exhausted. It is his duty to arrange with all available means at his disposal for the supply of ammunition to the fighting line; he must act as a directing link in the chain of command between the superior leaders in rear and the fighting line, whose attention is necessarily exclusively directed towards the front only, and see that the three 'zugs' act in harmony with the troops on either flank; and, as far as lies in his power, must make his greater experience and better-trained tactical knowledge tell in the conduct of the fight, particularly when, as must often happen, his subordinates are reserve officers or even only non-commissioned officers."

"Finally, he must ever remember that it is both his duty, and especially lies in his power, to impress on the whole of his command the stamp of his own individuality; and that his personal bearing and example has more influence in determining the result of a fight than that of any other officer in the whole military hierarchy."

The "Zug" Leader—i. e., the Subaltern Generally.

The "zug," which corresponds most nearly with our half-company, is the smallest body commanded by a commissioned officer, and it is his duty to keep his "zug" thoroughly

in hand, even in the most difficult conditions of ground, and under the disintegrating influences of the combat. His example, therefore, is of the utmost importance.

His most difficult duty is the maintenance of fire-discipline. The "zug" is the ultimate fire-unit, not the group or half-section, for it alone possesses the requisite fire-power to obtain a perceptible effect against all the ordinary targets likely to present themselves in war. Every man in it is directly under the hand of the leader, for the group leaders are only his assistants, and he should be allowed as much independence in the exercise of his power as the captain can grant him, taking into account his length of service and personal qualifications.

He must thoroughly understand the amount of fire-power at his disposal and its suitable application. The control of this power is not a science, to be learnt from the regulations, but rather an art, which by practice can be developed in an extraordinary degree. There is all the difference in this respect between a good and a bad "zug" leader, as between an average band sergeant and the leader of a crack orchestra; and a good leader will have his fire so completely in hand that he can regulate it from the slowest and most deliberate dropping fire to the full crash of rapid independent fire; and at the same time be able to change it from one objective to another, as may become necessary.

But even apart from this fire-control, his responsibility is still a very great one. When the first extension takes place, he receives his orders from the captain, but as the fight progresses, both time and means often fail the latter to communicate his further intentions, and then he must act on his own initiative in choosing the proper forms to suit the momentary circumstances; remembering always that "any delay or failure to act will reflect on his character more than a mistake in the choice of the method employed."

He is responsible also that in each rush his men are halted in the most suitable position within the limits assigned him, first, so as to make the fullest use of his fire; and secondly, to be as little exposed as possible. If he finds himself on ground on which he can no longer act, he closes his

command himself and joins the rest of the company; and in any case, the close of the movement must find his "zug" in the right place and front, whether in close or in open order.

The "group leaders" are not links in the chain between the "zug" leader and his men, but only assistants to help him to control them; orders only pass through them when the sound of the firing overpowers the leader's voice. He (the group leader) controls the position of every man under him, and sees that all orders with regard to sights, object to be fired at, etc., are carried out, and if the fire becomes too hasty, he takes steps to put a stop to it. He regulates the distribution of ammunition brought up from the rear, communicates the range to any other group arriving on his flank, and if another becomes doubled up, on reinforcing, with his own, he redivides the two into fresh commands, with the leader of the reinforcement, without waiting for orders from his superior.

Just as the "zug" leader is bound not to let any opportunity pass of taking advantage of any mistake on the part of the enemy, and yet is held responsible that he does not pass out of the hands of the captain, so also is the group leader responsible in both directions to his "zug" leader, and the close of any maneuver or fight must find him in his right place, with reference to the rest of the "zug."

It will be noticed that the position of the group leader is very different from that held by him in most armies, our own included, in which he is supposed to command the men of his section or squad, and not merely to act as an assistant to the lieutenant in command, and the reason above given will, on examination, I think, commend itself as a sound one.

Besides the group leaders, each section is supplied with two or three picked judges of distance, who are specially selected and trained, and has also from four to six men specially selected to act as scouts on the battle-field; and further, a special non-commissioned officer to act as serrefile, to follow the line in action and see that no straggling takes place.

Extended Order.

"Troops principally *fight* in this order; the action is commenced in this form, and in most cases carried through to the decision in it." (Exercir Reglement II, Sec. 19.) The difficulty of leading troops when extended varies with the nature of the ground, the cover it does or does not afford, the noise, and other demoralizing influences of the fight. The actual value of a body of troops—i. e., the degree of education the soldiers have received and their discipline—can therefore be best judged by seeing them in extended order; for since they are then withdrawn from the immediate supervision of their leaders, greater demands are made on their own individual judgment and intelligence. But though considerable freedom and independence must thus be left to the individual, still he must be distinctly given to understand that, as long as his leaders can make their influence felt, he is bound to the strictest obedience, and may only take the law into his own hands when the leaders are no longer there to give him orders. "The strictest discipline is even more essential in extended order than in close"; and it is no longer the dashing enterprise of the individual, which was formerly the special mark of good skirmishing, but the resolute steadfastness of all resting on a strong sense of duty as a foundation, which is decisive. This sense of duty is stronger than fear of punishment, and lasts longer in presence of danger. It can principally be developed in the men by the thorough education of the individual, and by the maintenance of extreme smartness in the execution of all commands, not only on the drill-ground, but in field maneuvers also. This does not, of course, mean that these maneuvers are always to be carried out at attention; on the contrary, the Germans are very particular to spare their men all unnecessary exertion, only calling them to "attention" for movements which have to be made under the enemy's fire; but they demand, nevertheless, that, when a word of command is given, it shall be obeyed with the utmost rapidity and precision. For instance, one may meet a company shuffling along the road, smoking, laughing, and joking, as it executes some portion of a large change of front, but when it reaches its ground,

and receives the commands to halt, order arms, lie or kneel down, each one is obeyed with the same instantaneous precision with which it would be done on an inspection parade.

At least as much attention should be given to securing the exact and punctual obedience of all movements and orders required for the maintenance of fire-discipline and the advance under fire as is devoted to the smart execution of the manual. Such movements are rapid loading, fixing the sights at the correct elevation, fixing side-arms, particularly when lying down. The instantaneous obedience to the command "Rise!" previous to an advance should be particularly insisted on, so that even under fire it may be obeyed mechanically; similarly also the greatest care should be devoted to seeing that the individual men learn how to direct their fire to both right and left, so that it may be concentrated on any particular point as desired, and finally the immediate cessation of all fire on the sound of the whistle. Smart execution of these things can only be obtained by officers who know how to command smartly, and sleepy or drawly words of command will only be obeyed in a sleepy and slovenly fashion.

Movements of the Fighting Line.

The great difficulties connected with the movement of long lines of men in extended order demand that this subject should be particularly practised in peace-time, under all sorts of varying conditions. The greater the extent of the line, the less attention can be paid to the cover of the individuals, as soon as this consideration clashes with the unity and maintenance of direction by the whole. On the other hand, in large bodies it becomes the duty of the superior leading to choose a line of advance which will afford as much cover as possible for its troops.

In the advance the "zug" and group leaders march in front, the center group leader being responsible for the direction, unless otherwise ordered, and the remainder judging their intervals from him. When the line halts to open fire, each section and group is not bound to halt on the spot it occupies at the moment, but may run forward a few yards

if by so doing it obtains a better field of fire than it otherwise would, without, however, interfering with its neighbors alongside. (It is obvious that to conform to both these conditions a very high degree of training, and even of talent, is necessary on the part of the group leaders.) The position of the following support depends primarily on its being able always to reinforce at the right time. As the fighting line closes on the enemy, the necessity for prompt reinforcement becomes greater, and hence the support must be nearer. Similarly the more obstinate the fight, the greater becomes the urgency for backing up the fighting line. But in both cases proximity to the fighting line entails heavier loss, and the problem is to balance the two, bearing in mind that the infliction of injury on the enemy, and not the avoidance of loss, is the primary consideration.

The support may join the fighting line either on the flanks or directly from the rear, by doubling up with the men already there. The former has the advantage of keeping the sections distinct, but is rarely possible where the company is acting with others, and the latter has distinctly the advantage of acting as a stimulus and encouragement to the men already in the front line. In this case the group leaders must re-divide the line between them, without waiting for any commands.

As regards formation: any formation may be employed which tends to diminish loss without, however, detracting from its unity and handiness—in open ground line will be the most suitable; in undulating or intersected ground some form of column—and it will move so as to occupy always a relatively correct position with reference to the fighting line—i. e., it is not bound to conform strictly to the movements of the latter, but may, within the limits fixed for it by neighboring troops and the necessity of conforming to the above-mentioned conditions with regard to distance, choose its own time and way of carrying out its duties. As a general rule, it will move in quick time and strictly at “attention”; it may, however, be compelled to move at the “double.”

The Control of the Fire of the Fighting Line.

The order to open fire, by the "zug" leader, must convey the following information—viz., the direction of the object to be fired at, the particular portion of the object to be taken under fire, the elevation, and finally, the nature of the fire to be employed—thus:

Half left on the low hill—artillery two right-hand guns—at 1,000 yards, ready, etc.

The choice of the object is a very important point, which usually has to be decided by the section leader on his own responsibility. A company in fire will usually be a more important body for the time than a distant battery, and an advancing line of skirmishers better deserving of attention than the support following them. Where several targets are all equally important, the best plan is to choose the deepest and densest; and against skirmishers, to direct the fire at that portion of the line behind which advancing supports are observed; and when fire has been opened against any particular object, it should be continued till that object has been destroyed.

Volleys or Independent Fire.

The nature of the fire employed will vary with the targets and the conditions under which these expose themselves. The volley is, of course, excluded as soon as the noise of the firing on either flank, or the heaviness of the enemy's fire, renders it doubtful whether the executive word can be either heard or obeyed, and this will generally be the case. Consequently it can only be used in the introductory phases of an action, to obtain the correct range, or against cavalry, or in ambuscades. Otherwise independent fire is to be preferred, as it allows of better aiming and consequently more hits. Independent fire may be either slow, brisk, or rapid; brisk and, still more, rapid firing leads only too often to badly aimed fire. This want of fire-discipline can only be kept in check by continual practice and the greatest strictness of officers and non-commissioned officers. It is not the number of shots fired, but the number of hits, which decides. But

though a steady, well-aimed fire generally obtains a better percentage of hits, it does not follow that a slow fire is always to be preferred to a rapid one; that would be to mistake altogether the nature of the advantage conferred on us by the new rapid-firing arm. Except when the necessity exists of saving ammunition, or where one is particularly well covered from the enemy's fire, a slow rate of fire can only be blamed, for though a higher percentage of hits may be obtained by this means, it takes very much longer to do so, and consequently entails heavier losses on one's own side; for instance, if a line of skirmishers advancing across the open against a line of well-covered defenders went in for slow fire only, it would suffer a double drawback—viz., heavier losses and develop less fire-power than its adversary, who would, therefore, soon obtain the fire-superiority; and that, too, even if the assailant was originally numerically stronger, for in that case, his men being more closely packed in the fighting line, they would be easier to hit. Hence it follows that, as a principle, in action, one should shoot as rapidly as possible consistently with careful aiming, and if an access of fire-power is suddenly required at any portion of the line, it should be developed by bringing fresh rifles into the fighting line, and not by increasing the rate of fire. It is very difficult to hit the right mean between an overcareful husbanding of ammunition and its reckless expenditure—niggardliness at the wrong time may entail defeat, whereas the opposite course may of itself suffice to bring about a fortunate decision; the best practical rule to follow is to reserve one's fire as long as possible, and then to confine its greatest rapidity to those moments in which the targets exposed offer the most favorable chances of obtaining a high percentage of hits.

The Observation of the Fire-Effect.

The chief advantage derived from the introduction of the smokeless powder has been to facilitate the observation of the fire-effect. Before, this was generally impossible; now, however, with good field-glasses, the effect of the bul-

lets striking either on the ground in front or amongst the enemy can be seen at great distances, and the fire of a section "ranged," except under very unfavorable conditions, almost as well as a battery. (This is the author's view, not mine; but it must be remembered that even with the old black powder, it very often was possible to find the range from trial volleys; and without the smoke to interfere with the operation, it must obviously be far more easy now than it was then, and particularly so at short ranges, where the enemy's smoke hid the effect of one's shot, which will have a decidedly exhilarating effect on the shooter.)

"Though the fire should, as a matter of principle, remain as long as possible in the hands of the 'zug' leader, it is obvious that in the latter stages of the fight his presence cannot be counted on or his voice heard, even if he is still there to command, and similarly, too, with the group leaders; the men will then be left to their own resources, and it is therefore imperative that their training should have fitted them to face such exigencies, and if necessary, once set in the right direction, to fight the battle out automatically. It is for this reason that so much stress is laid on the musketry instruction of the individual man, who must know not only the best targets to fire at, but the importance of reserving his fire, and the difficulties of replenishing his ammunition when once it is expended."

The Supply of Ammunition.

One of the chief advantages of the new magazine rifle consists in the reduction of the weight of the cartridges, which is, relatively to that of the old Mauser pattern, in the proportion of 27 to 43, and hence the 150 rounds now carried weigh actually 1 pound less than the 100 rounds the man used to be loaded with; the method of packing them is also a very practical one, favoring particularly their rapid distribution in action. Five cartridges are made up in a small metal frame, and are placed in the magazine simultaneously. Every three of these frames are made up into a small pasteboard packet, in the sides of which holes are made to enable

the forefinger and thumb to catch hold of the frames readily. The packet is opened by tearing off the pasteboard lid. The advantages of this method of packing are that all fumbling for cartridges is done away with and the actual time of loading is reduced by four-fifths. The packets can be laid down on the ground alongside of the firer without risk of the bullets becoming covered with sand or grit, their distribution is easier, and their collection from the dead and wounded much simplified.

Fifteen of these packets, in three layers of five each, are made up in a larger pasteboard case, weighing when full 15 pounds, and furnished with straps, which enable two such cases to be slung on a yoke or a simple stick, and brought up over the shoulders. Five of the cases go into one cartridge-box, which is of the same cubic contents as the old one, but which holds 1,125 rounds as against 900, and weighs 12 pounds less.

The 150 rounds carried by the man are thus distributed: the two front pouches on the belt contain 2 packets or 30 rounds each; a larger pouch, also on the belt, but carried behind, carries 90 rounds; and all the pouches are fitted with strips of leather or webbing by putting on which the packets are raised so that they may be readily grasped and pulled out. The pouch ammunition is to be considered more as a reserve stock for sudden emergencies; otherwise, whenever a fight is in prospect, additional rounds are to be issued and carried in the pockets, haversacks, or between the buttons of the coat, and these are to be used up first. The man must further be taught always to keep the right-hand pouch full for occasions when rapid firing is required, and if it has been drawn on, then to complete it again as soon as possible. When fighting on the defensive, packets of cartridges are to be laid alongside of each individual soldier.

During the progress of the fight, the cartridges are to be replaced from the small-arm ammunition-wagons, each company commander detailing a sufficient number of ammunition-carriers. The small-arm ammunition-wagons will be drawn up as close to the fighting line as conditions of cover, etc., permit, and will supply ammunition to any body of troops

who may require it, without reference to the regiment to which they belong. In critical moments, they must not shirk driving right up into the fighting line. All supports advancing into the front line will bring up with them as many rounds as possible.

Infantry versus Infantry.

In a contest of infantry versus infantry, fire-effect decides, and this condition can be satisfied either by engaging a larger number of rifles, by concentrating the fire against a decisive point, by better shooting and fire-discipline, or, lastly, by utilizing cover more skillfully. Each or all may be employed, according to circumstances.

Fire-effect is best developed in extended order, and therefore have as many skirmishers as possible—every body of troops kept back is in itself an evil. But the difficulties of recognizing from the first the proper point against which to put them in, together with the necessity of protecting the flanks and generally for providing for eventualities, render it impossible to extend the whole fire-power of the company from the first, and hence a formation in depth is a necessity (and, it is implied, an evil).

Where the company is fighting alone, in broken ground, and the situation not yet clear, caution must prevail, and but few men be extended; but where the conditions are reversed, and where prompt support may be counted on, the whole company may be broken up. There is, therefore, no absolute best or worst. Each case must be decided on its merits only.

Too weak a support implies over-daring; too strong an one, a dispersal of force. The evil of retaining too great a reserve of power in hand reaches its culminating point when soldiers are thus saved up only to be used in case of a repulse. On the other hand, a support well placed under cover preserves its full power, and can thus be employed with all the greater vigor at the decisive time.

Bearing these principles in mind, the company commander will in most cases do well to keep, during the intro-

ductory phase of a combat, the fighting line as weak as possible consistent with the development of the absolutely essential minimum of fire, in order to be able to employ the unshaken remainder of his command to the best possible advantage in the later stages of the combat. Though, as a general rule, it is customary to extend a whole "zug" at once, yet in the earlier stages the object of the extension is only to gain touch with the enemy and to guard against surprises, and to retain full freedom of action with the bulk of one's striking-power, and for these purposes even a group may suffice. On the other hand, the simultaneous extension of several "zugs" is by no means excluded; at times, in fact, it is absolutely necessary. In order to attain the requisite degree of fire-superiority, it is, as a rule, necessary to bring into action a greater number of rifles than the enemy, and all at one moment of time, and not by driblets, because a gradual reinforcement of the fighting line often does not lead to the attainment of a superiority, but barely suffices to fill up the gaps caused by the enemy's fire. Therefore, if possible, double the number of men should be extended from the first as the enemy shows against one; and this particularly in the case of a company forming part of a battalion, as the remaining companies can be trusted to act in its support. Still, as a rule, even when in battalion, the companies should each keep their own closed support in hand.

The company fighting alone should only in the very rarest cases be entirely extended. From the first it should strive to maintain at least one closed support, and even a second one further to the rear or behind an unsupported wing is not excluded, but in the actual execution of an attack the leader must not hesitate to employ, if necessary, every available rifle in the front line; it may be just the last half-dozen extra ones that turn the scale.

Concentration of Fire on the Decisive Point.

Fire-superiority does not altogether depend on the relative proportion of rifles engaged, but better control of the fire may give the superiority to the side which is actually

numerically inferior. But the first condition necessary to fulfill in the latter case is to be able to concentrate the whole fire-power under one's command on the decisive point of the enemy's position, and there, on that point, obtain the desired result; in most cases the rest of the line will fall back without waiting for more. The advantages of a convergent fire are obvious, but, from the nature of things, the possibility of developing this convergency belongs specially to the assailant, who possesses the power of freedom of motion by which he can envelop the point of attack; and in proportion as he exerts this power, the effect of his own fire is increased and that of his adversary lessened.

Musketry Training and Discipline.

To utilize the full power of the weapon, coolness, individual skill, and fire-discipline are the chief requisites. The introduction of the small-bore rifle with its flat trajectory has reduced the value of individual marksmanship, as the flat trajectory has lessened the importance of correct distance-judging. Consequently, we must rely more on the superior coolness of our men, and use our utmost endeavors to develop their fire-discipline to the highest possible pitch, for without such discipline the control of the fire and its concentration on the decisive points would be an impossibility. Fire-discipline comprises the conscientious execution of all orders received during the fight, and the most minute attention to the rules laid down in the musketry instruction. Further, it demands steadiness under fire; even when the latter may not be returned, care in the delivery of every shot, constant watchfulness by the leader of the enemy, and the immediate cessation of fire the moment the target disappears or the sound of the whistle is heard.

Cover.

Good cover helps much to the attainment of the desired fire-superiority, because it lessens losses, and hence gives, even to a numerically weaker detachment, the power of inflicting a proportionately higher degree of loss; and the in-

troduction of smokeless powder has added to its importance, for formerly the puff of smoke betrayed the position of the enemy, and hence only cover thick enough to stop the bullets was of any avail, whereas now any bush or tuft of grass which conceals the individual renders it impossible to aim directly at him. Invisibility is therefore of the first importance; a sharply defined trench of freshly turned earth, by attracting attention and drawing a convergent fire, may nowadays prove worse than useless. But, owing to the increased penetration of the new bullets, earth parapets, when intended as actual cover and not merely as a screen against sight, will require a thickness at the crest of at least 4 feet 6 inches, and against long-range fire shallow trenches are of little value.

Masonry screens, such as houses, walls, etc., give dangerous splinters when struck by the new bullets, and the thin walls of modern "jerry" built structures are no longer secure against penetration; under artillery fire they should be avoided, as they not only afford conspicuous marks for the gunners to lay on, but they are no longer shell-proof, and further, the poisonous gases evolved by the high explosives now in use for bursters will render any closed rooms untenable. (In 1870 a 2-feet-6-inch brick or stone wall proved generally sufficient to stop either French or German shells, the velocities being low, and the shells, bursting instantaneously on impact, only scarred them slightly. Going over the battle-fields last summer, I saw many instances—notably at the Geisberg at Weissenburg—in which buildings, though bearing numerous marks of direct hits, had, nevertheless, scarcely suffered at all.)

Wooden shelters require to be at least 2 feet 6 inches thick to stop a bullet, and hence the cover formerly afforded by trees in wood fighting will now generally prove illusory. In occupying a wood, therefore, trenches should be made some little distance to the front, as the crashing of the bullets through the branches above tends to unsteady the troops by giving them an exaggerated idea of the enemy's fire.

Infantry versus Cavalry.

Smokeless powder will have a most detrimental effect on the cavalry. Formerly the infantry only saw the approaching horsemen up to the moment they themselves opened fire, for the smoke, as a rule, at once hid them from sight, and it happened occasionally that excited infantry blazed away into their own smoke long after the squadrons they had opened on had ridden away. This can never happen again. But, in spite of the immense increase of fire-power, cavalry will still attack infantry that it has reason to believe to be shaken, and infantry should stand to receive such attacks in the formation they happen to be in at the moment, never running into groups. Squares are only justifiable when, owing to want of ammunition, the infantry are defenceless.

The writer makes a calculation of the number of rounds that can be delivered by a company of 200 men in the time the cavalry would take to close from 440 yards,—viz., half a minute—and gives it at 10 rounds per man, or 2,000 in all; but a battery in line would deliver a larger number of bullets on the same front and in the same time—and yet batteries have been ridden down before now, even with a couple of thousand yards of clear field of fire before them.

Infantry versus Artillery.

The author considers the relative power of the two arms much the same as formerly, but the smokeless powder will prove much more advantageous to the infantry. Up to 1,500 yards the artillery can still hold their own against infantry, but within 1,000 yards, since they require three to four minutes to find the range, it ought, generally speaking, to be impossible for them to come into action at all with any prospect of success. If the infantry can get within 800 yards, they should establish their fire-superiority very rapidly, and within 400 yards it ought to be altogether impossible for the gunners to limber up. But these deductions only apply as long as the fire-discipline of the company remains intact.

I think it will be useful to give the statement of the number of rounds at different ranges which the writer considers necessary to put a battery out of action, as it affords a basis to guide an umpire in his decisions, and at any rate marks the limit beyond which even an extreme partisan of the foot soldier can hardly go.

At 660 yards 1,600 rounds should silence a battery of 6 pieces.

At 880 yards 5,000 rounds should silence a battery of 6 pieces.

At 1,100 yards 8,000 rounds should silence a battery of 6 pieces.

At 1,320 yards 19,000 rounds should silence a battery of 6 pieces.

At 1,650 yards 30,000 rounds should silence a battery of 6 pieces.

But this number of rounds must be fired within a certain time, otherwise the artillery fire will seriously diminish the number of rifles available. If, for instance, a group of 10 men, with 1,000 cartridges available, were to tackle a battery at 1,100 yards, then each man would have to fire 800 rounds; and at even 25 rounds a minute the operation would take 32 minutes—an obvious impossibility, yet it is the sort of decision that umpires sometimes give. The best chance infantry have is that afforded them when the guns are caught in the act of unlimbering, for during the three to four minutes available, during which the gunners are ranging, no return fire is to be feared. If, therefore, during those minutes a sufficient number of rifles is at hand to deliver the requisite number of rounds steadily and without hurry, the battery may be safely tackled; if not, it should be let alone. Hence at 1,100 yards not less than a company should be available against each battery, and at 1,650 a whole battalion at least would be required, and the expenditure of ammunition out of all proportion to the possible results. Of course, if the battery is under cover, the number of rounds required may be indefinitely increased.

Movements under artillery fire should be carried out in line, and no closed bodies of infantry can remain halted

within 2,000 yards of artillery, if the latter are actually firing at them; within 1,500 yards no lateral movements in close order of any kind can be carried out.

The more all the guns of a battery are annoyed by fire at the same time, the less accurately will they shoot; on the other hand, such dispersion of fire does not promise the best results except at short ranges; hence at long distances the fire of a whole company should be directed on one gun at a time, for choice the windward one, and at ordinary ranges—i. e., within 1,000 yards—each “zug” can devote itself to a single gun, either the odd or even ones.

Attack or Defence.

Then follows a very thorough examination of the old question of anvil or hammer under the new conditions of smokeless powder and small-bore, flat-trajectory weapons, in which the author, whilst admitting the many points in which the defence gains, such as concealment and increased depth of fire-zone to be passed over, nevertheless comes to the conclusion that, on the whole, the balance of advantages remains with the assailant, and principally because the defender is bound to hold a line and be equally strong at all points, whereas his opponent requires only to make his superiority felt at a particular point, the choice of which must always remain in his hands; and further, the power of concentrating the fire of a superior number of rifles against this point is immensely increased by the range of the new weapons. It is, however, obvious that the application of this principle of concentration makes far higher demands on the excellence of the troops and their fire-discipline than the “straight to the front” method of fighting formerly. Still it is the object of the new regulations to ensure this higher discipline, and practical men in Germany do not consider the standard to be unattainable, but say the smokeless powder will distinctly aid the maintenance of this fire-discipline, and that, by enabling not only the leaders but the individual men to see their objective before them, the whole act will be carried out with a greater degree of harmony and a higher energy.

As a general rule, the defender has the advantage due to his knowledge of the distances at the longer ranges; hence it is not to the interest of the assailant to attempt to tackle him on this, his strongest ground. He must strive at once to get in to closer ranges at which the flat trajectory of his weapon puts him on equal terms with his enemy. In doing so heavy losses are to be expected, but the only way to reduce them is to shorten the time of exposure, and every man must in peace be convinced of this truth. It will rarely, if ever, be possible to advance uninterruptedly to decisive ranges with the dense line of skirmishers on which the execution of the attack actually devolves. But this line, whatever its formation may be at the moment, must be covered by a light line of true skirmishers to annoy the enemy and generally to act like the ground scouts of the cavalry. Eight to twelve paces between the files is recommended, and then he proceeds to describe in considerable detail what is nothing more or less than an attack conducted in the true spirit of the British line, the point of which, it must be remembered, did not lie originally in the bayonet attack, but in the bringing up of the maximum possible number of muskets to decisive range. It was the fire which was meant to do the work, and not the cold steel, and it was precisely because the point came to be overlooked that it became possible for our would-be reformers to bring about the state of confusion and muddle in which our present ideas on infantry fighting are involved. It is really immaterial whether the line is formed two deep or in single rank, the object to be borne in mind being only the maximum possible development of fire. But what differentiates the line from skirmishing or independent-order fighting is, whether the choice of where to die is left in the hands of the individual or of his leader. And from the above it will be very evident that, in Germany at any rate, the man has very little say in the matter. His military qualifications, his character, etc., are all developed up to the highest possible degree to enable him to act in case his leader should fall, but till that event happens, the discipline is as rigid as ever it was in the days of Frederick the Great. The whole end and aim of the

modern German training, as it appears to me, not only after reading the above pamphlet, but after watching the practice of the new regulations on the parade- and maneuver-grounds last autumn, is to introduce into the fighting line the same absolute concentration of the will on the instantaneous execution of the word of command as was formerly considered only necessary in the close-order school.

Certainly this idea has not yet stood the test of experience, and there are in Germany many who hold that the two opposite qualities—viz., individuality and absolute obedience are absolutely irreconcilable. The "Midsummer-Night's Dream" was an effort in this direction. But there seems no real reason in the nature of things why this irreconcilability should exist, and in fact, as has been frequently urged in these columns, the example of the navy actually proves that it does not do so, for the smartest drill to be seen in the German Army is a joke by the side of gun drill on the *Excellent*. The main point in which the execution of the modern attack differs from the old one of a century ago is that, as the limit of effective range has been extended up to between 600 to 800 yards from the enemy's muzzle, the operation of obtaining the fire-superiority has nowadays to be repeated perhaps three or four times in succession before the position can be actually entered. The immediate effect of a heavy fire is only momentary; and troops recover their power of resistance very rapidly if the fire directed against them ceases, as it must necessarily do when the assailant begins to advance, and fresh supports may reach them and thus reëstablish the balance. When this takes place, the assailant will be compelled to halt and to repeat the process, and for this purpose a second, third, and even a fourth line must follow behind the fighting line. The provision of these following lines in sufficient number being the duty of the superior commander, and since he has all along known where he means to put in the bulk of his force, whereas his adversary has had to keep his reserves distributed to meet all possible eventualities, it is evident that in this game of successive reinforcements the ultimate advantage must always be on the side of the assailant. Smokeless powder

and flat-trajectoried rifles make no difference here; but, since it is admitted that the sight of the killed and wounded lying around has always affected the defender more than the assailant, for the latter in his forward movement leaves the victims of the fight behind him, it is evident that in this respect the absence of the smoke-veil will have a very detrimental effect on the former. Now the backward and forward movement of lines of troops, when once hotly engaged, appears to obey an instinctive impulse in the air, so to speak. Every body of troops possesses a certain power of resistance, depending on its discipline and its nationality. On the troops of one nation the loss of 10 per cent will create such an impression of terror that it will bolt at once; those of another may fight on with 50 per cent down. Certainly the rapidity with which such loss is inflicted counts for very much, and the youth and inexperience of the troops for yet more. The losses troops suffer in the attack depends primarily on the length of time they are out in the rain, but since the new rifle and the absence of the smoke-screen enable them to inflict not only a greater but a more demoralizing loss on their adversary in the same time, it is obvious that they themselves need not be so long exposed to fire as formerly. The decision will, therefore, be brought on more rapidity, and the difficulty of guarding against it by timely reinforcement on the part of the defender will be even more insuperable than it used to be. At any rate, this is the line of thought pursued in the German Army, and it appears to me to be in consonance with the traditions of our army and the nation at large; and I can only trust that this article may be of use in removing some of the terrors with which, to judge from contemporary military literature in England, the introduction of the new arms has invaded us.

NOTES IN GERMANY IN 1889.

Contrary to all one heard last year relative to the new German Infantry Drill Regulations, the old Prussian "parade marsch" still lives, and long may it continue to do so, for I am confident that it actually has counted for more

in the victories of the German Army than our apostles of the new school of tactics appear to realize.

Ultimately I believe it will be found, by those who pursue the subject far enough, that the disciples of passive endurance, which is still the essential point to some four-fifths of the troops engaged, at any rate during its introductory phases, is the outcome of continuous exercises of the simplest description; but which, being carried out, in the words of the German drill-book, "with the utmost concentrated effort of mind and body," by degrees enable the will to entirely master the natural weakness of the man himself, and thus to render him capable of facing death itself unmoved.

It is in the "parade marsch" that this "concentrated effort" finds its highest expression. No soldier can look on entirely unmoved at a German battalion marching past. In spite of the unfavorable impression their somewhat clumsy accouterments, the average youthfulness and boyish appearance of the men themselves, and their habit of marching out of step when at ease is calculated to create, no sooner does the band strike up, and they are called to attention, than they become transformed, and sweep by with a proud, confident bearing that makes one feel one might do anything with such men. Now it cannot be honestly maintained that the march-past of the average British or native battalion inspires one with any similar feeling. Now and again an exception occurs, but they are few and far between. More generally the effect on the spectator is one of pure boredom, mitigated only by the amusement one derives from the mounted officers' attempts to salute. Why is it that on these occasions both men and officers give one the impression of being overcome with bashfulness? Off parade, as a rule, no one can accuse them of it; but just in that one act of military pomp, in which every man should feel as if his regiment first and himself next were the only things in the world worth thinking about, they are all seized with a tendency to hang their heads like modest maidens, and to look at the toes of their boots. Of course there are battalions and battalions. The Guards, Sikhs, Ghoorkhas, all still fill one with the thrill of soldierly pride; but, as regards

the vast majority, the impression the ordinary march-past conveys to the observer is that both men and officers are bored, and that neither care a straw for themselves, the regiment, or each other. Our forefathers were perfectly right when they settled on the march-past as the test by which a commander can best judge of the spirit of a regiment in a short space of time, for in no other way is it practicable to concentrate the whole of the wills of the men on one effort to excel, and the more every man looks on himself as the best in the best regiment in the world, the more overpowering will be the impression conveyed to the reviewing officers' mind. Cleanliness and smart turn-out, due to punishments and harassing, are absolutely useless to blind the eyes of the true soldier, and one can never help smiling at the way some commanding officers seek to impose this transparent eye-wash on generals and inspecting officers who have all been through the same mill before them, and know every dodge in the game; but when cleanliness and smartness are there as the result of the pride of the men in themselves and in the regiment, their influence again reacts on the feeling of the men in the march-past, and contributes to the force of the impression made upon the reviewing officer.

It is necessary to insist on this view of the matter, for there is an increased tendency in the Infantry to believe that, because the fighting line no longer maneuvers in close order under fire—a change, by the way, which really was made by the French in the Revolution, and not by the Germans in 1866—therefore marching past, smartness under arms, etc., are all a useless waste of time, and to point to the new German drill-book in confirmation of this. In reality no greater mistake could be made. It is granted that to the casual reader the book in question may seem to sanction a departure from the former standard of smartness, but those who are bound to read it the most carefully—viz., the officers themselves—don't interpret it in that spirit at all. The fact is, that practically the new book is merely the final sanctioning by regulation of the then existing interpretation of the old one, which had established itself on a sort of "survival of the fittest" principle by a system of trial and

error experiments since the last war. For years past the greater part of the old book had been as extinct as the dodo, and all drills and tactical exercises and maneuvers had been conducted in very close accordance with the new prescription, though no official sanction for the custom existed, and therefore a man was always liable to be pulled up by some befogged old pedant who might not have assimilated the theory of modern fighting—a condition which, though it rarely occurred, still rendered the subordinates a little nervous, and led to a certain amount of time being wasted on non-essentials. Otherwise nothing has been changed in the spirit of the training at all.

One point which strikes one very forcibly indeed after watching our own Infantry drill is the excellence with which the words of command are given, and the general attention paid to the bearing of the officer who gives it. The new regulation lays particular stress on this point, and insists that, except in cases where a loud command might betray the presence of an ambuscade or generally defeat the idea of a surprise, the word of command is to be given with the utmost precision and distinctness, and the intention of the regulation is consistently and thoroughly carried out. Of course, the same idea exists in our own service, on paper—but on paper only; too often one can see an officer who considers he has done all that is necessary in raising his voice sufficiently to be heard by the men under his immediate command, and if they happen to be only a single man detachment or an officer's guard, he speaks to them only in his ordinary voice, and at the same time does not trouble to come to "attention" himself. The result necessarily is, that as he himself does not take the trouble to put himself out, the men don't see the necessity of exerting themselves either, and the order is obeyed in a casual sort of manner, most subversive of the idea of discipline. One can see this on any guard-mounting or church parade, where the numbers to be controlled are insignificant. As I write, I can recall five instances in point, all of them guards of honor for the commander-in-chief or a lieutenant-governor, and the officers in command of which were all rather above than

below the average of smartness; yet, with the commander-in-chief, all his staff, and a host of spectators looking on, not one thought it worth his while to make his men jump to his word. Just across the road here lives the officer commanding the battalion quartered in this place, and twice a day under my windows the ceremony of fetching the colors and bringing them back is gone through, of course by a different officer and guard on each occasion. Yet every time the officer halts his command, steps out in front of it, standing strictly at "attention," and gives the necessary words with the same energy and life as if he were drilling a battalion. I can only say that even the Guards in London, who are unquestionably far smarter in these and similar duties—in fact, in all drills—than anything else in the army, can show us nothing like it.

Now let any one who cares about these things go down to a company instruction parade or any similar duty and see whether officers, even the smartest, give their commands with this concentrated vim, or as if they really meant to be obeyed. In fact, if, as I believe, obeying does not merely imply a leisurely doing of a thing, but rather a sort of jumping into the collar, an instantaneous simultaneous movement of all, as if an electric shock had struck them, no real obedience is ever seen with us except on a battalion parade; and I fear that, till the idea of company officers commanding their own men is fairly adopted in our service, it never will be, for neither men nor officers feel that they belong to one another. The company officers do not really command their men, but, through the courtesy of the colonel and adjutant, the men are lent to the officers to play with. But it is quite different in the Artillery and Engineers; there both men and officers belong to each other, and they know it; and though in neither service is it possible, as a rule, to insist on the simultaneous execution of a command—for, generally speaking, each number has a different duty to perform—yet one can see in a moment the immense difference of the influence the officers of the scientific branches (so called) exercise over the men under them. Possibly this statement will be objected to by many who have not thought about the

matter much; if so, I can only ask them if they have ever galloped for a general, or if not, the first time they do, to notice the difference between the way an order is received and obeyed by a Gunner subaltern and an Infantry one. I, for one, do not believe, or, at any rate, believe only to a very limited degree, in the system of selection for commissions by examination, and can myself find but very little to choose between the raw material at Woolwich and at Sandhurst; but compare the finished product after about five or seven years' service, and there can be little doubt as to the superiority of the system of delegated responsibility by which the Artillery man is trained, and that in vogue in the rest of the army.

To those who are too proud to learn from either the Germans or another arm of our own service, let me recommend the study of our own navy, in which again the system of delegated responsibility is the motive at work. No man's pride can be hurt by being compared with a national service which is excellence itself, and no one who objects to the German system of command as inapplicable to English conditions can maintain his objection when he sees the results which the very same system worked by Englishmen afloat is capable of turning out.

BLANK VERSUS BALL CARTRIDGE TACTICS.

A tactical work of more than usual importance has just appeared in Berlin. It is from the pen of Lieutenant-Colonel von Malachowski, a well-known authority of the general staff. As far as I have had time to read it, it seems to be the very thing tacticians have been searching after for the last twenty to thirty years. The title I have freely rendered above, and in the main the book may be described as an historical unraveling of the alternate influence peace and war, together with improvement in armaments, have had on the evolution of tactics since 1742, the era of the first Silesian war. It is specially devoted, of course, to the German armies, but the French also come in for their share of criticism, and the chief point to notice is, how time and again an admirable system evolved on war service has been

ruined by the pedantry of the parade-ground and the zeal of tactical "drill-book mongers." It is a sizable work (some 400 pages) and would have been more valuable, if less readable, with a larger allowance of references. What the ultimate conclusions will be I do not yet know, but it is a book which can be studied with profit by all, and to avoid waste of time in ordering it, I take a special chapter out of the middle, partly as illustrating the tendency of the work, partly as giving us the opinion of a well-known Russian tactical authority, Dragomirov, on the Prussian Army as it was in 1866, a point of departure very essential for all who would study the development of modern breech-loading tactics. Malachowski says, speaking of the *moral* of the troops at the outbreak of the war:

"Of special enthusiasm in the men there was no question; the object of the war was not understood by the lower classes, and the lower middle ones did not sympathize with it. But the want of this enthusiasm was replaced by loyalty to king and country and the feeling of duty and honor inherent in the nation. It was better with the officers; they were animated with a degree of personal incentive to distinction and intelligence hitherto unknown amongst them. As regards the drill-book, all that was of value was to be found on the four pages devoted to the company column; excluding these, probably no infantry ever took the field with a less practical regulation. As the event proved, it was fortunate that it was so, for with the then prevailing pedantic tendency on the drill-ground a revision could hardly have failed to bring in much that was evil."

In explanation I may add that in the main the drill-book was Scharnhorst, original 1809-12, one with concretions more or less detrimental appended.

"From Kessel's work we may learn that we had about grasped the idea of small in preference to battalion columns, but these were still in the bonds of hard-and-fast adherence to prescribed distances and intervals within the limits of the battalion and brigade drill. It was this very tendency which proved so disastrous to the Austrians. The infantry was thus practically thrown on its own resources; thanks

to its officers, this was about the best thing that could have happened to it.

"On mobilization, at latest on the passage of the frontier, we stripped off our figurative regulation clothing and the most diverse forms came to light. In one corps the two-deep formation was accepted as fundamental; in another one would not hear of company columns, and formed half-battalions and half-companies; in a third the two flank companies were sent forward, the two center ones following as a half-battalion in rear; in a fourth companies always formed in column right in front. It is a pity no one has ever collected all the variations indulged in both in 1866 and 1870." * * "And the King looked on with a laugh at all, wisely leaving every man to win in his own way; only being strict against neglect of duty and want of zeal. It is wonderful the effect this steady confidence of his in the troops exercised on our officers in both wars."

The picture the new national army presented applies well also to the conditions of 1870. To get an impartial idea of it, let us see what an able Russian general, Dragomirow, who followed the war on Steinmetz's staff, has to say of it. His book appeared in 1868, when the impression of his experience must still have been fresh in his mind. He first treats of the "spirit of the army and character of its training":

"Duty for duty's sake in all, even the smallest details, is the most characteristic trait in the Prussian Army. At first it might seem this devotion to minor details of duty would result in pedantry, yet the facts show this is not the case. The Prussian soldier is not of an excitable temperament; his love of order, obstinacy, and steadiness, however, deserve high praise. What is very remarkable is the extraordinary unity of opinion and similarity in the way of grasping a question of military importance in the officers, and their inexhaustible zeal. The essential points are not lost sight of in this care for the small formalities; the letter does not kill the spirit, for this letter is a characteristic of the race. Every Prussian is in a sense a pedant, but a pedant who acts; consequentially pedantic not only in his

relation to others, but equally to himself, even against his own interests. No one seeks his own ends at the expense of others, or allows either himself or others license."

As an example of this strictness, he quotes General Steinmetz daily letting the corps defile before him, passing over little irregularities which pleased or cheered the men,—a rose in their coats or leaves in their helmets,—but remorselessly down on anything betokening real slackness,—an unbuttoned shoulder-strap, for instance. Malachowski agrees to all this, only he points out that if pedantry had not in 1866 killed the spirit, it was due to deeper causes since 1806, and not to anything essential in the character of Prussian pedantry, for Prussian pedantry had brought about the disasters of that fatal year. Those causes were the introduction of short service, the education of the nation (?), and what he, as far as I have read, has not alluded to—the growing tendency to decentralization, the necessary consequence in Prussia of the short service. Dragomirow then goes on to the training of the troops for war, first amongst the officers. With them the "similarity of appreciation of military problems" is a chief factor, and the "nature of his surroundings, which compel every officer to improve his knowledge." Theoretical and historical knowledge of war he finds in all, and therein he sees "the chief counterpoise against the soul-destroying influence of the cult of the drill-book." The officers of the general staff he finds completely free from the tendency to systematize, so common amongst civilian Germans. They recognize that practical ability is not so much a matter of deep or extensive knowledge as of the capacity to adapt this knowledge to the object in view. The efficiency of the general staff is the special work of Von Moltke. He then proceeds to analyze Prince Frederick Charles's "instructions (literally hints) for the troops taking the field under my command in 1866." To the best of my belief, it is unknown in England. After pointing out that though in its broad features the campaign is intended to be conducted in an offensive form, yet it may happen that locally troops may be thrown on the defensive when their fire-power as against the Austrians should decide every-

thing. He then recommends precisely the same style of fighting which won for us our fame in the Peninsula—a few skirmishers to hang on the flanks of the approaching columns and then at point-blank range half a dozen volleys and the bayonet. One point he insists on: "The first line is never to be relieved by the second; troops once sent in to the fight must stay there to the last. The relief of the two lines as practised on the parade-ground does not and never has taken place, as it was intended to in war, and it is not to be attempted." As to formation, Dragomirow says: "The Prince seems to be in contradiction: first, with the regulation, by proposing his own forms; and secondly, with himself, in allowing the troops to choose whatever forms they are best accustomed to. But behind this apparent contradiction lies sound principle—viz., to allow the greatest possible moral and intellectual freedom to the individual; for only under these conditions can the individual develop his full powers and knowledge to the greatest good of the whole."

Here the author (Malachowski) digresses and asks the parade-ground tacticians, who also cite the Prince as on their side, "Do they really believe we owe our victories in 1866 to the fact that the regulations contained prescribed forms for the attack of a battalion or brigade? Is it not rather the case that we won because our officers were sufficiently well trained and intelligent to modify the regulations to fit the circumstances, and to the developed character which enabled them to act on their own responsibility?" Of General Steinmetz, Dragomirow relates that he saw him daily, on marches which did not lead to an encounter, inspect the baggage-wagons, and ask every man with them why he was there, sending him back to the front if he was not duly authorized. In other corps men often crawled like bees over the wagons. Such thoroughness on his part had a great effect on the discipline of his command. With regard to the attack on Skalitz, Dragomirow asked Steinmetz for details of his dispositions. Steinmetz replied: "Oh! the thing is very simple. One simply attacks, and if beaten off, attacks again, and so on till one succeeds." "But,"

said his interlocutor, "do you not relieve the troops?" "Relieve them?" replied the general in a puzzled sort of tone. "Yes; with fresh ones when the leading companies have become dispersed?" "Oh no," returned the general. "Troops once under fire must stay there till the end." The idea of relieving troops has at last died out pretty generally, but at that time in most other armies it was almost a matter of faith, and one must appreciate it to understand the peculiar form the battles on the Continent during the previous twenty years had assumed. It is a point that at the time was much overlooked by our own authors, particularly in criticisms on the Solferino campaign. The position of the Prussians at Nachod Dragomirow considers to have been very precarious, and in discussing it comes to the common-sense conclusion, but one which differs entirely from that usually assumed by battle critics, that "The theoretically deduced demonstrations of the better plan, however, usually fail to grasp all the factors actually in play at the moment. This is what students of war usually overlook—in practice the immediate point is not what is best, but what is possible." On the evening of the 28th June, when Benedek learnt of the combat of Soor and its prejudicial result for the Austrians, he turned on Henikstein and Krismanic with the words: "I told you they would beat us if we employed our forces in detail," and from this remark and the history of the day he deduces that a commander-in-chief can never learn the art of war by practice alone. If he has not prepared his mind by careful and thorough study of military history, he falls helplessly into the hands of any "Weyrother." Weyrother, it will be remembered, was the unfortunate chief of the staff who devised the beautiful parade maneuver which was to have destroyed Napoleon at Austerlitz, but which the latter tore asunder. The name has since become a generic term to describe the product of the parade-ground, a closet student who without personal responsibility prepares plans for soldiers to execute. Dragomirow does not make his meaning quite clear here, for Von Moltke too was but a closet student, and the fact that he had never even commanded a battalion was hardly an advantage to him. What

it all comes to is the guidance under which a man studies war, or, in the absence of guidance, the genius he brings to bear on it. One or the other he must have; without either, neither practice nor study, nor both together, will avail. With reference to Königgrätz, he (Dragomirow) admires the conception of the battle as a whole, still more the initiative of the commanders who dared to assume the responsibility of modifying their orders to suit the changed circumstances. This was specially noticeable in the case of the advance of the 1st Guard Division on Chlum, for the orders could not have been based on an accurate knowledge of the circumstances, no such knowledge being conceivably possible at the time they were issued. Finally he says:

"All the world wonders at the efficiency of the new Prussian weapon, but it occurs to but few to notice the coolness, intelligence, self-denial, and sense of duty of the men who held these weapons. Are these factors really only secondary? Are they not, perhaps, *the decisive ones?* In war that side will be defeated that was already beaten in peace. In war mutual self-confidence, the root of discipline, cannot exist when in the individual the feeling of duty has not been developed, or perhaps the soil from which it springs does not exist. Each man must at least be sufficiently carried away by the cause for which he is fighting, which may, for the moment, be only the credit of the body of troops, the company or regiment to which he belongs, to die for it cheerfully. In a way, the truth of this is universally admitted; we are never tired of repeating, 'In war *moral* counts for three-quarters,' etc., but when we come to investigate a particular point, this is forgotten, and one endeavors to deduce the result from the weapons, the hair-powder, or the length of the pigtails. The effect of the Prussian fire was not in itself particularly remarkable, and if as a fact it did spread universal consternation, the reason is only because people forget too easily former experiences. To whom is the terrible effect of British volleys in Spain unknown (remember it is a Russian who speaks)? In those days the armament on either side was equal, but there were other points of differ-

ence—viz., national skill in the use of arms, coolness, and steadiness.

"With weak or insufficient development of the moral quality of the troops, no improvement either in weapons or in drill will avail anything. Both no doubt help to overcome the obstacles between us and the attainment of our ends, but do not teach how to pursue these ends with determination and energy. This cannot be taught, it can only be evolved from the personal energy of the men and their leaders; without this energy, indeed, better weapons only do harm, for they lead to waste of ammunition. An improvement in the method of employing troops will then also be of evil, for though it teaches the way to overcome obstacles, at the same time it reveals their full strength, and thereby affords undecided characters excuses and justification for their want of determination. The Prussians now and again formed unskillful plans, but they formed them with resolution, and, thanks to this quality of resolution, in the end they remained victors."

I have reproduced Dragomirow's ideas at length, partly for their intrinsic interest, and partly because these extracts show Malachowski's fairness of mind in accepting a foreigner's judgment of his own army, and still more his confidence in the fairness of his brother officers who will read the book.

THE END.

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